

JOURNAL of the American Veterinary Medical Association

FORMERLY

AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Assn.)

EDITED AND PUBLISHED FOR

The American Veterinary Medical Association

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(Original Official Organ U. S. Vet. Med. Ass'n.)
H. Preston Hoskins, Secretary-Editor, 735 Book Building, Detroit, Mich.

W. H. WELCH, President, Lexington, Ill.

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October, 1923

No. 1

A SPLENDID RESPONSE

The task of mailing approximately 4000 statements of dues was not completed until August 16. The first responses were received before all the statements had been mailed. August 20 was the banner day, when 160 remittances for dues were received.

At the time this is being written, a little over a month after the statements were mailed, approximately 1400 members are in possession of their membership cards for the current year. This is a splendid showing and is indicative of the good feeling which appears to prevail throughout the Association at the present time. It augurs well for the year we have just entered.

One reason for directing attention to the large number of members who have so promptly met their obligations is to remind even the larger number who have as yet not forwarded their dues. Every member who makes it unnecessary for us to send him a second statement saves the Association money. Multiply this saving by 2000, the probable number whose dues will remain unpaid October first, and it makes quite a sum. One hundred dollars would not be an exorbitant estimate, considering postage, stationery, printing and labor.

If you have not paid your dues, please do so before it slips your mind.

A MEMORABLE MEETING

The Montreal meeting will undoubtedly go down in American veterinary history as one of the most important gatherings of veterinarians on the North American continent. The meeting did not set a record, however, from the standpoint of attendance, the number of those present, estimated at about 800, having been exceeded at Columbus, in 1920, according to statements of several Buckeye members at the meeting. There were many features to contribute to the success of the meeting, and to place the credit in any one place would not only be difficult but unfair. The presence of two distinguished guests, Sir Arnold Theiler, of Pretoria, South Africa, and Professor Charles Porcher, of Lyons, France, gave the meeting a distinctly international atmosphere.

The members of the Local Committee on Arrangements were justly entitled to the unstinted praise which they received on all sides for the completeness of the preparations which they had made for the convenience of their guests. The Mount Royal Hotel made a splendid headquarters for the convention, the arrangement of the rooms for the meetings, both general and sectional, being particularly well adapted. As usual, several of the morning sessions were rather slow in getting under way, but, once started, President Welch kept things moving at a lively pace. One of the outstanding features of the business sessions was the absence of acrimonious debate, even though there were predictions that some rather spirited discussions were to take place. On the other hand, there seemed to be an atmosphere of peace pervading the convention hall at practically all times.

There was a little difference of opinion over the report of the Committee on Revision of the Constitution and By-laws, but this consisted merely of the statement of the opposing views of several members, on points where there is always bound to be some difference of opinion. The report was referred back to the Executive Board; the President was authorized to appoint a special committee to give further study to the proposed amendments, this committee to report to the Executive Board before the 1924 meeting. All amendments which have been proposed will be published in the JOURNAL again, sometime before the 1924 meeting, so as to permit the membership at large to study these amendments further and be able to vote upon them more intelli-

gently when brought up for adoption at the next meeting. This action appeared to meet with practically unanimous approval.

The Committee on Policy made its report to the Executive Board, which body, in turn, reported to the Association. It was decided not to adopt the policy at this time. It was the opinion of those present that the adoption of a policy was such an important procedure that it would be preferable to publish the policy in the JOURNAL, at an early date, so that every member of the Association may have an opportunity to examine it in all its details. The proposed policy will undoubtedly affect every member of the Association, in one way or another, and its publication in the JOURNAL, prior to adoption, will afford every member a splendid opportunity for studying it beforehand.

The report of Treasurer Jacob showed the Association finances to be in good condition, in spite of the unusually heavy drain made on the treasury the past year, incident to moving the offices of the Secretary and Editor and establishing the new headquarters of the Association.

The report of the Secretary-Editor showed the present membership to be 3967. Resignations were accepted to the number of 17. In most instances these members were resigning because of no longer being identified with the veterinary profession. Forty-two deaths were reported during the year, an unusually large number. Applications for membership numbered 206, of which 198 were accepted. Many references in the report reflected the wisdom of consolidating the offices of Secretary and Editor.

JOURNAL finances were shown to be in a healthy state, in spite of the unusually heavy expenses of the past six months, incurred in moving the JOURNAL equipment from Washington to Detroit. The final report of the Committee on Revision of Veterinary Anatomical Nomenclature was received and adopted, and the committee discharged. The Secretary reported that the Committee's report was now in printed form and that the Executive Board had authorized the sale of copies of this report, at \$2.50 each.

The election of officers resulted as follows:

President—Dr. C. H. Stange, Ames, Iowa.

First Vice-President—Dr. F. T. Daubigny, Montreal, Que.

Second Vice-President—Dr. H. E. Kingman, Fort Collins, Colo.

Third Vice-President—Dr. Geo. H. Hart, Berkeley, Cal.



The above group picture appeared in "La Presse," a Montreal daily newspaper printed in French, on the opening day of the meeting. Those in the group are, left to right, front row: Dr. L. A. Merrillat, of Chicago, Ill., who responded to the address of welcome; Dr. D. Genereux, Alderman of Montreal and member of the Local Committee on Arrangements; Sir Arnold Theiler, of Pretoria, South Africa, guest of the Association; Dr. W. H. Welch, President of the A. V. M. A.; Alderman Leon Trepanier, acting Mayor of Montreal; Dr. M. C. Baker, of Montreal, third vice president of the A. V. M. A. and Chairman of the Local Committee on Arrangements; back row: Dr. A. T. Kinsley, of Kansas City, ex-President of the A. V. M. A.; Dr. E. A. Watson, Chief Animal Pathologist, Department of Agriculture; Dr. A. H. Baker, of Chicago, Ill., oldest alumnus of the Montreal Veterinary College (1876) at the meeting; Dr. H. Preston Hoskins, of Detroit, Secretary-Editor of the A. V. M. A.; and Dr. G. A. Dauth, of Montreal, Treasurer of the Local Committee on Arrangements.

Fourth Vice-President—Capt. R. A. Kelser, Washington, D. C.

Fifth Vice-President—Dr. Hamlet Moore, New Orleans, La.

Treasurer—Dr. M. Jacob, Knoxville, Tenn.

Secy.-Editor—Dr. H. Preston Hoskins (re-appointed).

While the tellers were counting the ballots, President Welch asked for the presentation of invitations for the 1924 meeting. Dr. E. R. Steel, of Grundy Center, Iowa, Secretary of the Iowa State Veterinary Medical Association, extended a very cordial invitation for the American Veterinary Medical Association to hold its 1924 meeting in Des Moines, Iowa. Dr. H. E. Bemis, of Ames, Iowa, seconded Dr. Steel's invitation, with the statement that he was conveying to the Association the invitation of President Pearson and the entire veterinary faculty of the Iowa State College, for the Association to meet in Des Moines.

Dr. A. T. Everett extended a very warm invitation for the Association to meet in Omaha, in 1924. Dr. Steel then moved that the Association recommend to the Executive Board that the 1924 meeting be held in Des Moines. This motion was seconded by Dr. J. I. Gibson, of South St. Joseph, Missouri, and carried. Dr. B. T. Simms then extended his annual invitation for the Association to meet in Portland, Oregon, in 1925. He expressed the wish that all other cities would refrain from extending invitations for the 1925 meeting, so as to leave the field open for Portland.

Mrs. H. P. Hoskins was then given the privilege of the floor, for the purpose of explaining to the members the nature of the Women's Auxiliary and what they were trying to do. She asked that those members having wives and daughters convey to them the message concerning the Auxiliary and urge them to affiliate so that the work might go on.

The Sectional meetings were very well attended, particularly those of the Section on General Practice. The papers were very interesting, and brought out some splendid discussions. Section officers were elected as follows:

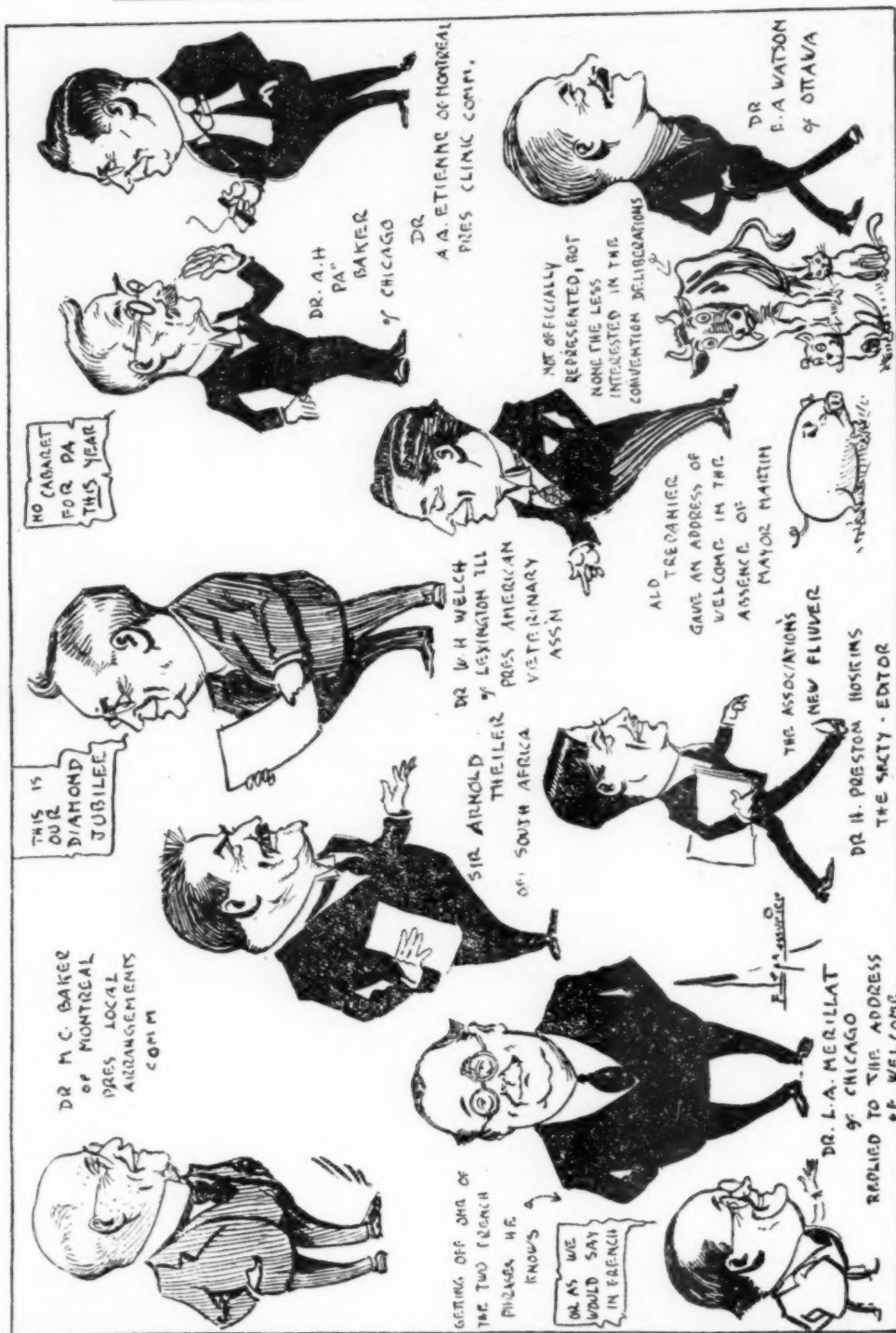
SECTION ON GENERAL PRACTICE

Dr. Harry Caldwell, Chairman, 324 South Hale St., Wheaton, Ill.

Dr. E. R. Steel, Secretary, Grundy Center, Iowa.

SECTION ON EDUCATION AND RESEARCH

Dr. H. C. H. Kernkamp, Chairman, University Farm, St. Paul, Minn.



Cartoon by Le Messurier, which appeared in the Montreal Daily Star, Wednesday, August 29, 1923. The same evening, during the banquet, the original, in colors, was presented to President Welch, by Dr. Etienne.

Dr. E. M. Pickens, Secretary, University of Maryland, College Park, Md.

SECTION ON SANITARY SCIENCE AND POLICE

Dr. Orlan Hall, Chairman, 92 Fourth Ave., Ottawa, Ont.

Dr. J. H. McNeil, Secretary, Dept. of Agriculture, Trenton, N. J.

We will discuss the social features of the program next month, when we expect to have accounts of the various alumni gatherings, the women's auxiliary meetings, the banquet, the excursion to MacDonald College, the boat-ride and other features.

COMING VETERINARY MEETINGS

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Oct. 3, 1923.

Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.

Southeastern Michigan Veterinary Medical Association. Detroit, Mich. Oct. 3, 1923. Dr. H. Preston Hoskins, Secretary, 735 Book Bldg., Detroit, Mich.

Dixie Veterinary Medical Association. Memphis, Tenn. Oct. 10-11, 1923. Dr. C. C. Brown, Secretary, Union Stock Yards, Memphis, Tenn.

Eastern Iowa Veterinary Association. Cedar Rapids, Iowa. Oct. 10-11, 1923. Dr. F. J. Crow, Secretary, Iowa City, Iowa.

Massachusetts Veterinary Association. American House, Boston, Mass. Oct. 24, 1923. Dr. C. H. Playdon, Secretary, Reading, Mass.

Mississippi State Veterinary Medical Association. Grenada, Miss. Oct. 24-25, 1923. Dr. Hugh L. Fry, Secretary, Jackson, Miss.

Southeastern States Veterinary Medical Association. Greensboro, N. C. Nov. 12-13, 1923. Dr. J. I. Handley, Secretary, Box 1533, Atlanta, Ga.

U. S. Live Stock Sanitary Association. Hotel La Salle, Chicago, Ill. Dec. 4-5-6, 1923. Dr. O. E. Dyson, Secretary, 923 Exchange Bldg., Kansas City, Mo.



W. H. WELCH
President of the American Veterinary Medical Association
1922—1923.

THE ADDRESS OF THE PRESIDENT¹

By W. H. WELCH, Lexington, Ill.

Among the summarized duties devolving upon the president of this association, the delivery of an address during the annual meeting is mandatory. Being illy prepared for such purpose, either by ability or inclination, I crave your indulgence for presenting what must necessarily be found lacking in many of the time-honored details, when subjected to the scrutiny of those, who because of more intimate acquaintance with all the various activities of our profession, command a broader vision by reason of such contact. The view-point gained solely from the source of a plain, country practitioner, must naturally tend to dwarf and warp one's vision, and limit one's capacity for the full and perfect conception of our honorable profession, which in its entirety is so vast that it touches upon either the physical or financial welfare of all humanity.

The address of the president of any organization is usually of an inspirational character, and ordinarily consists of a graphic recital of the achievements of the past, while sounding the clarion to awaken the membership to the duties and opportunities of the hour, and visualizing the perfect future.

I would that I possessed the power to present appropriately for your consideration the glorious history of our profession, so young in years, yet so full of accomplishment, that were all our past services to humanity effaced from the records, the world would be set back an inestimable epoch in her progress.

Other professions exist, yet aside from our sister profession of medicine, none bears such important relationship to humanity and to human progress as does ours, and I would that I might impress upon the mind of every veterinarian the high call to duty and the wonderful opportunity that the present day affords to us and, like the artist, might outline upon the canvas of the future, that which would insure the fullest measure of professional progress, because our professional progress means human progress, and the world waits on us today for the solution of many problems.

I desire, at this time, to state that words are wholly inadequate to express properly to this association the profound grati-

¹Delivered at the sixtieth annual meeting of the American Veterinary Medical Association, Montreal, Canada, August 27-31, 1923.

tude I feel for the great honor you conferred upon me, when you elected me as your president. When I think upon the past history of our profession, and the important part it has played in the progress of our nation; when I peruse the list of my predecessors in office, and contemplate upon the life of service which each so conscientiously rendered to his profession; when I consider others among our membership, far more worthy and deserving than I, by reason of having rendered valuable service, not only to this association and our profession, but to all humanity, and yet have failed to receive such recognition, I realize something of what a really great honor it is to be allowed the privilege of serving as your executive officer and shrink at my unworthiness.

THE PRACTITIONER RECOGNIZED

Let me assure you, however, that I have accepted this great honor and with it its responsibilities, in the same spirit that I know prompted its bestowal, which was that of a sincere and deserving tribute paid by this association to the humble practitioner, and gentlemen, on their behalf, as well as my own, I thank you with all my heart. The lowly toiler of our profession, who has courted no higher encomium than to be known as the faithful servant of the live stock owner, has nevertheless by reason of such contact, been the dignitary who has at all times proudly carried upon his shoulders the honor and reputation of our profession, and has shaped our destiny until he has builded us in the eyes of the world into the highly meritorious position that we as a profession occupy today.

It is therefore a tribute, as richly deserved as it was justly bestowed, and in crowning the lowly toiler of your profession you have enhanced and dignified the majesty of his calling. Moreover, you have given a proper exemplification of the proper functioning of all our various branches of veterinary activities, for it is only by a just recognition of the rights of each other that we will be enabled to reach the acme of success and as a profession to render the highest possible service.

I want to give testimony to the fine spirit of cooperation that has at all times been extended to me. It has made a real pleasure of what would have otherwise, at times, have been a hardship, had it not been for the willingness on the part of all to sacrifice personal and factional interests to the good of the common cause. I want especially, on my personal account, to thank the various officers, from the highest to the lowest, for each and all have

labored zealously in behalf of the association. Theodore Roosevelt once said: "Every man owes something of his time and talents to the upbuilding of the profession to which he belongs," and it has been in a spirit of this character that you have devoted hours and days to the service of this association and through it to your profession, and in addition to the greatest compensation that can come to man, which is that of the consciousness of a service well done, you have merited the sincere thanks of a grateful organization for whom your labors have been spent.

For more than half a century the leading veterinarians of our country have annually journeyed to a designated spot, there to compare notes on their progress, and otherwise to advance the interests and welfare of our profession. This meeting marks the sixtieth anniversary of our existence. Proud of our achievements of the past, the large attendance at this opening session of our conference lends inspiration to the present and foretells a profitable meeting. Besides providing the vacation that you need from your daily labors, this meeting may be likened to a short, post-graduate course, wherein the master minds of our profession are the instructors. It constitutes the very best means at our command for increasing our efficiency and usefulness, which is so necessary to cope with ever-changing conditions, and is the leading agency in spreading the gospel of enlightenment to our profession.

PUNCTUALITY ESSENTIAL

I am especially delighted to see so many ladies present. I believe that at no previous meeting have greater pains been taken to provide for your entertainment and comfort. Please do not forget, however, that much of your pleasure will depend upon your punctuality and the cooperating spirit with which you accept the entertainment provided. Try and make it as easy as possible for your hostesses, and when notified to be at a given spot at a stated time, be certain that your watch is correct, for the time schedule will be strictly followed and it will be your loss if you fail to be present.

Not only is this admonition applicable to the ladies, but I desire to emphasize its importance to the gentlemen. We have a definitely outlined program, and it is absolutely essential that we adhere to it strictly throughout the meeting. The business to be transacted here is of utmost importance, and the various problems to be discussed have a distinct bearing upon the future of this association and actively concern the personnel of our pro-

fession. Do your officers the courtesy of being prompt in gathering at the different sessions; be brief and to the point in your discussions, and you will assist materially in expediting the business of the occasion.

Those who, in the past, have been regular attendants at our annual conferences, cannot but experience a tinge of sadness as our present assemblage proceeds to enter upon its labors, for truly there is something missing. During the past year death has exacted an unusual toll, and never in our past history has a twelve-month bereft us of so many shining lights. It is not my purpose to elaborate on this subject since our Committee on Necrology will report at a later period during our meeting, other than to state that the passing of such men as Drs. F. A. Bolser, J. W. Klotz, Olaf Schwarzkopf, Edward Merillat and J. G. Rutherford, who were more than national characters, cannot but be seriously felt by this association and our profession has been deprived of a very large portion of our most valuable assets. However, the influence of the lives of such men as these lives on, and becomes to us a sacred heritage that inspires us to nobler deeds and greater achievements. Peace to their ashes. They have not lived in vain.

SECRETARY-EDITOR

A few years ago, this association instructed the Executive Board to take steps toward combining the offices of Secretary of our association, and that of Editor of our JOURNAL, and to locate in a permanent home. During the last annual meeting the Executive Board reported that they had selected Dr. H. Preston Hoskins to fill this responsible position and their action was duly endorsed by the association. While there were those who opposed the change at that time, I believe that all will now acknowledge that, at least, no mistake was made in the selection of the man for this dual position and the wisdom of the choice is daily becoming more evident. Our association is to be congratulated on his acquisition, and may rest secure in the knowledge that the affairs and duties connected with this office will be conscientiously and ably cared for.

Valuable assistance may be rendered him in his official capacity as Editor, however, by our entire membership, who should forward to him for publication, reports of interesting cases and other scientific papers, as well as news items that are of interest to the profession, such as deaths, marriages, births, changes in location,

etc. I must confess that I, for one, like to read about the things that are happening to my colleagues, and I believe that others enjoy that feature also, and feel that it very properly demands a place in our JOURNAL. The secretary is the most important officer of any association, and the American Veterinary Medical Association is no exception. We might dispense with the services of a majority of all the other officers, and yet our association could continue to function and much progress would be made. The President, wisely limited to a year in office, can scarcely become accustomed to his duties, ere his successor assumes the leadership. It is therefore a wise association that having once secured an efficient and hard-working secretary retains his services from year to year.

VETERINARY EDUCATION

One of the primary objects given in the Constitution and By-laws for the organization of our association was "To elevate the standard of education." In that day the horse constituted about their only patient, and the appellation of "horse doctor" had about it the ring of truth. The instruction received in our colleges had reference in particular to the equine subject, and what consideration was given to other domesticated animals was largely for the purpose of comparison. Although advertising to educate veterinarians, our colleges, in the strictest sense, were doing little more than graduating "horse doctors." Gradually dairy farming became more and more an important feature of agriculture, while in the cities many veterinarians began to specialize in small animal practice. The establishment of the Bureau of Animal Industry, the field of original research and other avenues of employment furnished vocations for many veterinarians outside the field of practice.

Finally, with the discovery of a successful method of vaccination against cholera, the greatest scourge of the hog industry, our spheres of activities had so increased as to make impossible an adequate training for these various services with less than a four-year curriculum. The American Veterinary Medical Association has been the influential factor in causing the various colleges to keep abreast of the times. Step by step the courses have been lengthened, and the requirements for matriculation have been raised. I am certain that the standard of our veterinary schools was never so high as at this particular period. I am likewise of the opinion that the corps of instructors and the

equipment at the different veterinary institutions was never of such efficient character, but I wonder if they fully realize the demands that the future will exact of the successful veterinarian and are properly preparing him to meet that emergency?

I presume I am safe in saying that fully ninety-five per cent of all students who matriculate at the different veterinary institutions do so with the full expectation of engaging in private practice following graduation. Doubtless more than eighty per cent of all our graduates are actually engaged in practice. It is a well-established fact that the successful practitioner of today is almost as largely concerned with the problem of keeping animals well, as of ministering to the ailing, and he must be thoroughly familiar with everything that is to be known concerning all live stock on the farm, if he is to be rated above the county agent in knowledge. He may blunder in his treatment of the ailing, with far more safety than to advise wrongly concerning the handling of the well animals. Now, when our business brought us into contact with none but ailing animals, we perhaps could be excused for stressing that part of our education, but the graduate of today, without a superior knowledge of animal husbandry and a familiarity that is born only by intimate association with his patients, is certain to be an ignominious failure in any breeding community

A CRISIS REACHED

The veterinary profession has been passing through a great crisis, from which we have not yet entirely emerged, and largely upon the ability of the practitioner to make good at his job, depends the future welfare of the entire veterinary profession. He has been largely handicapped, and has not had fair play, and it is up to our veterinary colleges to see that a similar instance does not occur in the future. He was suddenly transferred from a job where he functioned almost entirely as a missionary, ministering to the ailments of the horse, the only animal which he had been properly educated to care for, and was thrust bodily into the realm of hog practice, a hitherto despised animal, unmentioned in any literature, save market reports, since the day the Holy Writ denounced him as possessed of devils. Regardless of previous education or experience, he was groping in the dark. He called pathetically for help to the bacteriologist, the pathologist, his old instructors, and strained his eyes in search of useful knowledge in veterinary literature, but all in vain, for these agencies were as helpless as himself.

Nevertheless, with all these odds against him, the practitioner is making good, and is rapidly convincing even the doubting county agent that in the future as in the past, the control of infectious and contagious disease is safe in no other hands than the veterinarian. We want no more such experience. The veterinarian of the future is going to be the most important factor in successful live stock agriculture, and his patients will include everything from the canary bird up. It is going to be a big job that will require both brains and an education that must be lacking in no single detail.

Thus, I plead for a greater stressing of animal husbandry, and all those fundamentals that must give to the student the most intimate knowledge of his future patients in health, ere he attempts to study them in disease. Not only this, but ere he is granted a diploma, he must be compelled to serve a tutelage under the direction of a capable practitioner, in order that he may develop a confidence within himself that can be born only of experience. An education that is not both practical and comprehensive in every detail, is obtaining money under false pretense, for it will fail to prepare him in an adequate manner for the successful future that would otherwise be his. We are a young profession, but we are proud of our triumphs, and if we are to continue to occupy the important relationship to agriculture that we now do, we must qualify to meet the demands of the future, which will call for only the very highest type of service.

BROADER EDUCATION REQUIRED

In the face of all this, we are confronted with the prospect of what purports to be a veterinary college, advertising to open its doors offering a three-year course to prospective students possessing an education the equivalent of one year of high school work. For shame! Events in the recent past have disclosed the fact that we are still suffering as a profession from the previous, low, matriculation requirements and low mentality that pervaded our ranks in the past. I say this without apology, for the ones to whom I refer are not usually found in gatherings of this character. We can never make progress by going backward, and when the handwriting on the wall discloses very clearly the fact that the successful veterinarian of the future must be an authority on practically all the various phases of live stock activities, we must agree that the school that does not

thoroughly educate and adequately train the graduate to fill this important position, for which the future demands that he be thoroughly prepared, will be turning loose upon the public an unskilled man with more than an even chance of proving a total failure in his chosen calling.

There is a relationship between the schools and the practitioner that cannot be ignored, because the success and prosperity of the practitioner is always reflected in the attendance at our colleges. Our schools are empty today, because of the financial conditions that have confronted the practitioner, in common with the live stock agriculturist. The dawn of tomorrow promises a clearing of the horizon, and to my mind these was never a more propitious time for a student possessing the proper qualifications to enter upon the study of veterinary science than now.

According to the statistics of 1910, these were 11,552 veterinarians in the United States, and 2,717 undergraduates in the various colleges. At the beginning of the World War, in 1914, the students numbered 2,487, while in 1919 they numbered but 722, decreasing in 1920 to 613. In 1921 they had further decreased to 535, and dropped still further, in 1922, when there were enrolled but 531. Against this decrease of numbers in the student body, may be weighed the encouraging facts that while in 1910 there were 199,000,000 animals, with an estimated value of \$5,274,000,000 in 1920 the animal population had increased to 215,000,000, with a total valuation of \$8,566,000,000, which figures do not include pet animals and poultry, both of which are daily increasing the income of the progressive practitioner.

A BRIGHT FUTURE

In round numbers there are perhaps not in excess of 8,500 practitioners in the United States to protect the owners of these animals from loss. It is estimated that through death and other sources of depletion, we are perhaps losing around 500 from our ranks annually, while recruits graduating from our schools are averaging 180 only. Even should our enrollments increase, beyond any period of our history, there cannot help but be an absence of veterinarians in many communities that would afford a lucrative practice. We can therefore give positive assurance that the profession has never offered better inducements to the prospective student possessing the necessary qualifications than now.

The reclassification of federal veterinarians makes the Bureau

of Animal Industry far more attractive than formerly, while the army also offers inducements that it did not once possess. Therefore, be of good cheer regarding the permanency of our profession. It is founded on the rock of successful, live stock agriculture, without which this nation must fail. Our real problem consists largely in attracting to our ranks a sufficient number of young men, of proper adaptability and moral worth, in order that the live stock industry may not suffer through lack of veterinary service, as seems most likely to occur within the near future.

VETERINARY EXTENSION SERVICE

During the past few years much conflict has existed between certain elements within the agricultural extension service and the practicing veterinarian, especially in those communities wherein swine production constitutes one of the leading industries. One method by which this service functions is through a county agent, a person who is a joint employee of the extension service and the existing county farm organization. Thus, as the live stock industry is a most important integral part of agriculture, the veterinarian, as guardian of the health of the animal population, is brought into close touch with this extension service. Both are earnestly concerned in promoting the production of a better class of live stock. Each, however, has a definite and proper sphere of activity, and any encroachment by the one, upon the prerogative of the other, cannot but work disaster to the very industry which each should be laboring conscientiously to assist.

Agricultural extension service has for its basic object the promotion and improvement of all phases of agricultural activities. In utilizing public funds and facilities in the furtherance of such service, all branches of the entire industry must be impartially considered and harmonious cooperation between the various branches becomes the paramount duty of all concerned. Its true mission and limitations may be very properly classified as strictly educational and promotive in character. Thus, the county agent tests the soil and advises the use of certain correctives, but the process of applying the commodity constitutes no part of his duty, although he is recognized as a specially trained soil expert. Thus, the work of education and promotion in the development of better live stock becomes the proper field of activity for the extension service, while the problem of protecting the animals from disease and rendering aid to the sick, as well as

sanitary and regulatory measures for preventing the spread of infectious or contagious diseases, rightfully becomes the sphere of operation for the veterinarian and constructive work is but hampered when any portion of this is wrested from his control.

Aside from the live stock owner, the person next most concerned in the success of live stock production is the veterinarian, because he enjoys prosperity only when the live stock interests are prosperous. Likewise, the veterinarian is absolutely essential to the live stock owner, since his business becomes too much of a financial hazard, when undertaken without competent veterinary service within call. There had always existed hearty cooperation between these two interests until the advent of the county farm advisor.

The changing conditions in practice had caused the horse to be superseded by the hog, as the dominating factor in earning a livelihood for the country veterinarian. During the war period, it had been necessary to operate all agricultural activities at their greatest capacity, and especially was the swine industry urged by the government to produce at the maximum. Conservation, by immunization against cholera, the greatest scourge of the industry was imperative, and both farmer and veterinarian were happy and prosperous.

The farmer had joined all the various farm organizations, and was contributing to them his financial and moral support. There had persistently been drummed into his ears such thoughts as "Agriculture is the basis of all wealth," "The farmer is the only producer who has absolutely nothing to say concerning what he shall receive for his wares," "Join our various organizations, and in a short time we shall be able to dictate to the world the price they shall pay us for our products."

FARMERS HOODWINKED

It was an Utopian dream, but at the dawning came Armistice Day, and their hopes became shipwrecked when the market for the farmers' products, at such previously high figures, ceased, while the majority of all other commodities, now fearless concerning government interference, since the cessation of hostilities, exercised the power made possible by reason of their various organizations and reaped the benefit of the close cooperation of their industries. The price of everything that the farmer produced dropped far below the cost of production, while everything necessary to his welfare, except veterinary service, went skyward.

Hard times were upon us, and the farmers having failed to realize immediately the benefits that they had been led to believe would result through membership in the various farm organizations, were refusing to continue as members. Some tangible benefits must be shown him, that he could acquire only through membership.

Here was sown the first seed of discord between the live stock owner and the veterinarian. Previous to this time there had existed the most cordial and confidential relationship. Like a clap of thunder out of a clear sky came the proclamation from the county agent, that the live stock owner was being robbed by his servant, the veterinarian, especially in the matter of swine vaccination. It was news to the hog owner, but being interested in retrenching in every manner possible, he gladly listened, while the county agent explained how he might effect a saving by injecting the serum himself.

AGRICULTURAL PRESS SHORTSIGHTED

This proposition would unquestionably have fallen flat, as it deserved to do, had it not been for the assistance rendered by some scurrilous and shortsighted farm journals, which, overanxious to exhibit a sympathetic attitude toward the sorely distressed farmer, kept their columns seething with articles derogatory to the entire veterinary profession, both as to his charges and as to character of service rendered. Let it be said to the credit of the higher class farm periodicals, as well as for the far-seeing county agents, that they each recognized the veterinarian as one of the fundamental necessities for successful live stock agriculture, and sought to prevent friction between them, by advocating a get-together policy, so that the veterinarian would not be deprived of work which he alone was specially trained to do, and that the live stock owner and the live stock industry might not suffer through the work being attempted by incompetents.

Veterinarians have never denied that there have been specific instances of overcharging, nor that a few incompetents were to be found in our profession, but we do declare that our skirts are perhaps as clean as are those of any other profession, not excluding those of journalism or county agents. There have been physicians, surgeons, dentists and lawyers, who have overcharged their patrons, as well as county agents who have surreptitiously received commissions on serum sold in their counties,

yet that should not condemn their whole profession.

The fact remains that farmer vaccination was promoted by a few unwise county agents, solely as a means to lure farmers into joining or remaining in the various farm organizations. There can be no other explanation. A man supposed to be endowed with the intelligence necessary to lead the farming population into a better system of farming, knows far better than to wrest the control of the most serious infectious disease with which this nation has to contend, from the hands of the only man possessing the technical training necessary to cope with it, and deliver it over into the hands of the incompetent novice, for he must realize that by so doing, he is jeopardizing the whole financial interests of the greatest live stock industry of the nation.

The agricultural extension service has never sanctioned the movement, but has rather sought to curtail the activities of the erratic county agents in that direction, and without the assistance of the press in spreading their misleading propaganda, it would have gained but little headway. However, the inevitable result is fast occurring. Farmer vaccination is not and can never be a success, and the spasm is subsiding, but not without somewhat disastrous results to both veterinarian and swine owner alike. The veterinarian who has weathered the storm is again finding his superior service appreciated by the swine breeder who has discovered his own incompetence.

The lamentable part of the matter is that there have been driven to other vocations, many capable but discouraged veterinarians, while the part played in discouraging young men from entering the ranks of our profession can never be truly estimated. Already, there is to be noted a change in the attitude of the farm press toward our profession, but the disaster that has followed as a result of their unfavorable and unjust criticism can never be wholly undone. The combined efforts of all the agricultural press, the various farm organizations, the live stock owners, and the veterinarians, can never prevent a great shortage of veterinarians during the next decade and it is the live stock interests that must suffer as a result.

NEGLECTING THE HORSE

The changing conditions that riveted our attention upon the hog almost caused us to forget our old friend, the horse. As one peruses the programs that have been offered at the various meetings of the different veterinary associations during the past

few years, the genuine horse lover cannot but experience a tinge of sadness when he realizes how shamefully the noble animal, that once afforded his only means of support, has been neglected and must consider us as heartless ingrates toward the benefactor that supplied us with luxuries at a time when we possessed no other friend.

Let me bring to you the message that the horse is coming back, and you who have so openly shamed and snubbed him, by refusing him a place on your programs, while you openly courted the favor of the tuberculous cow, or in humility worshipped at the shrine of the filthy swine, will ere long be sneaking back to your first love, and offering an humble apology to the one most indispensable animal belonging to mankind. Not only has he been neglected by the veterinarian, but he has received less publicity through the farm press than any other farm animal. Compare the horse advertisements that are paid for, with those of the cattle, sheep, hogs and poultry, in any of the farm periodicals, and it usually ranks second only to the cattle, but more columns of reading matter are given over to either of those other industries than are devoted to the horse. Possibly more reading space might be permitted him, were he not such an active competitor of truck or tractor.

Might I also suggest, that I feel that it is time that a little more attention were given him by our research departments. Periodic ophthalmia and navel-ill, two diseases that exact a heavy toll from the horse industry, are especially worthy of study, as well as others that might be named. It appears to me that science has never given to the horse the devotion that the subject has deserved. We have even permitted laws pertaining to eugenics that were harmful to the production of a better class of horses, yet as a profession have never raised our voice in opposition.

We have noted, with pleasure, and assisted many times, in the formation of calf, pig and sheep clubs, among the girls and boys, but how many of you have ever even suggested the formation of a colt club? Are you a member of the Horse Association of America—the only organization in the world that is spending a single dollar to advertise the economy of horse power? Are you advising your farmer patrons concerning the breeding of their best mares, and assisting them in locating a suitable stallion to patronize? The veterinary profession can at once be a power in assisting the horse in his “come-back,” and in that

manner confer a favor that his farmer friend will greatly appreciate within the next few years. "Do your bit."

VETERINARY LEGISLATION

This association in the past has never greatly concerned itself with legislation other than that of a national character. We have for years maintained a legislative committee, and they have done valuable work at Washington, but there are measures of great importance that affect the welfare of our profession, occurring in the legislative bodies of the various states, with decidedly more frequency than they do in the national body, and this association should place itself in the best position to render them every possible assistance. While it is a well recognized fact that all ills cannot be cured by legislation, and it is perhaps true that each state association supports a committee on legislation, yet the influence of the national association in such matters is not to be lightly estimated, as in most cases it will prove the greater of the two.

I do not believe that it is generally understood that such assistance from our organization is available, and steps should be taken to lend a better cooperation to the various state associations, in all matters pertaining to legislation. The time is at hand when we must no longer consider ourselves as simply a profession banded together in this association for the purpose of scientific progress, although that thought must be ever kept uppermost in our minds, but if we are to prosper as a profession, one that will attract capable young men to our ranks, we must not allow ourselves to lose sight of the material side, or we shall ultimately fail, both as an association and as a profession.

AN INTEGRAL PART OF AGRICULTURE

In our relationship to the nation, our profession is simply an integral part of the vast live stock industry, and we, as guardians of the health of that industry, must ever be the first to recognize the public's interest as overshadowing ours. It is clearly our duty, therefore, to assist the public through their live stock associations, legislatures, etc., to understand the veterinary needs that shall make for the best interests of all concerned. Our profession is justly proud of its achievements in the past, but we realize that we have functioned at our highest point of efficiency, only when vested with full authority, and receiving the hearty cooperation of those whose interests we serve.

We would still have pleuro-pneumonia, dourine and foot and mouth disease in our midst, had any portion of control been delegated to the laity. The work of tick eradication promises eventually that Texas fever will cease to exist in our country, and that the South may become a great paradise for the cattle industry. But the work has been fought, step by step, and even at this late day meets with violent opposition from those farmers who are most benefited. Glanders has long been kept in suppression and tuberculosis will eventually be driven from our land, but it will never be accomplished while tuberculin is accessible to the farmer.

Anthrax, blackleg and hog cholera can be kept in a state bordering on complete suppression, but it will never occur so long as vaccines for those diseases are in the hands of the laity. It is therefore imperative, before we can arrive at our highest point of service to the public, that such vaccines, viruses, sera and biologics as are used as diagnostic agents and in combatting contagious and infectious diseases, be accessible to none other than veterinarians. It will require time, perhaps, to educate the people to the necessity for such action, but time and experience will ultimately convince all concerned that there is no other way, and that the incompetent county agent and farmer are dangerous and expensive factors in the control and suppression of infectious and contagious diseases of all farm animals.

There are some very important issues of a sanitary character that demand legislation. During the foot and mouth epizootic, we had a practical demonstration of what could be accomplished in preventing the spread of contagious and infectious disease, by compelling the railroads to disinfect properly each car after use in live stock traffic. It was quite noticeable that the spread of *all diseases* of an infectious character were greatly diminished, yet in the face of such facts, the disinfection of cars ceased as soon as the foot and mouth epizootic was over. Personally, I believe that a very large percentage of all contagious and infectious diseases affecting farm animals might be traced originally to infected stock yards, cars or sale barns. Since the first establishment of horse markets, through which passed a large volume of the horse power of our country, millions of dollars have been annually lost to that industry, through deaths, and the various sequelae of infectious, respiratory troubles, that could have been reduced to a minimum had a rigid system of weekly

or even monthly disinfection of these cesspools of infection been required.

Of recent years it seems practically impossible to purchase a load of feeding cattle through the various markets without great danger of carrying to their destination some contagious or infectious disease that may affect either the horses, cattle, hogs, or sheep occupying the home premises. We are permitting infected cars to travel from state to state carrying both hoboos and flies. The hobo does not travel far on foot, therefore is the lesser danger in the spread of disease, but if we had accurate knowledge as to just how far a fly would travel, or the route taken after leaving an infected car, we might trace with greater frequency the obscure origin of many epizootics. The normal fee charged the shipper for the disinfection of the car will prove the cheapest item in connection with the traffic, and they are entitled to all the protection that can be given them along this line.

Another important problem lies in revising the majority of our present stallion registration laws. Twenty-six of our states possess laws requiring stallions to conform to certain qualifications before being allowed to stand for public service. The majority of these laws are a travesty on all the known facts concerning heredity, and shame a veterinary profession that permitted their enactment without registering the most vigorous protest. In most instances soundness is made the basis of registration, without reference to either conformation or other extraneous influence, while structural weaknesses that predispose their get to numerous ailments and blemishes are ignored.

I have not time to enter into detail other than to remark the unproved fact of the transmissibility of any disease directly from parent to offspring, barring syphilis, while it is a well-recognized fact that type and conformation, either good or bad, are decidedly heritable. These laws should be based on type, conformation and individuality, rather than unsoundness, and we should have no place for the mediocre stallion. We must ultimately have state and federal subsidies for our best stallions, if we desire to improve our race of horses. Let us cooperate with our various state and national horse organizations and point the way to an improvement in these various laws.

COMMITTEE ON POLICY

At the proper time during the meeting a specially appointed Committee on Policy will submit a report to the association

formulating our attitude toward certain other organizations and conditions that materially concern our profession. I consider this report and the matter of its adoption to be one of the most important questions that will occupy the attention of the convention. For years we have drifted aimlessly along, with no well-defined policy, other than a declaration of the objects which led to the organization of this association, and so far as other organizations and conditions are concerned there has been no attempt to adopt any specific line of action. This will serve to clarify matters in this respect and broaden our field of activities, commensurate with our involved interests, and prove of inestimable value to our membership.

As an organization it is necessary that we concentrate a part of our time and efforts on those matters that are of practical importance to our membership and profession, and while our highest ideal visualizes the practice of our profession as true service rendered to the least of God's creatures, yet "Man's first duty is to man," and we should guard zealously against any encroachment upon our prerogatives. And so I say, "All honor to the American Veterinary Medical Association for its achievements of the past, and Godspeed to an enlarged policy that shall in the future function for the best interests of all."

ANNOUNCEMENT

The Southeastern States Veterinary Medical Association will hold its next regular annual meeting in Greensboro, North Carolina, November 12-13, 1923. Many distinguished veterinarians will address the meeting, among whom will be Dr. C. H. Stange, President of the A. V. M. A.; Dr. Cassius Way, of New York; Dr. J. R. Mohler, Chief, United States Bureau of Animal Industry; Dr. T. E. Munce, State Veterinarian of Pennsylvania; Dr. W. J. Lentz, University of Pennsylvania; and Dr. C. A. Cary, of Auburn, Alabama. A large portion of the program will be given to practitioners on subjects pertaining largely to small animal practice. This will be a meeting that no veterinarian in the Southeastern states can afford to miss. Secretary Handley extends an invitation to any and all veterinarians who can arrange to attend the convention. Look for a copy of the program in the next issue of the JOURNAL.

THE PRACTITIONER AS THE FOUNDATION OF VETERINARY SERVICE¹

By E. R. STEEL, Grundy Center, Iowa.

The object of the veterinary profession should be to give the live stock industry and owners of other animals the highest type of veterinary service obtainable. To do this requires that we accept some definite policy and outline a constructive program in which veterinarians engaged in all phases of veterinary activities can function without interfering with the greatest usefulness of each other. As the foundation for such a service, I believe that the profession can well accept the practicing veterinarian and build upon him for the greatest benefit to all interests concerned.

Since the practitioner has been promised help from the American Veterinary Medical Association, it may be well to outline some of the things which we think could be done for our good and I will, therefore, offer some definite recommendations based on general principles. Criticisms which may be made are aimed to be constructive, not destructive, and progressive, not retrogressive; and suggestions that may be made for the improvement of existing adverse conditions are meant to be rational, not radical.

It is coming to be felt by very conservative men in the profession that some things must be done to encourage the man in every-day practice, if the profession is to endure and remain of the greatest usefulness to the interests which it serves. It is with this purpose, then, that I present this subject before the American Veterinary Medical Association, for I believe that if we are to bring about any reforms, we must work through the profession, not appeal to outsiders who can not comprehend our problems or appreciate our difficulties. Many of our ailments we have brought on ourselves, aimlessly perhaps, in most cases, and working out of them can only be accomplished by directing veterinary activities into proper channels.

To do this requires that all veterinarians in all phases of the profession do their part in constructing a forward policy and certainly, to the practitioner, the movement started this last year, as reported by the Policy Committee, is encouraging.

In a general way, some of the various activities of the profession

¹Presented at the sixtieth annual meeting of the American Veterinary Medical Association. Montreal, Canada, August 27-31, 1923.

which are affecting the practitioner may be considered with a view to getting at the real problems for solution. Veterinary education, teaching of veterinary science in agricultural colleges, extension activities, federal and state medicine, commercial enterprises and the work of the practitioners themselves are some of the matters towards which this Association should undertake to work out a definite policy. A brief discussion of each of the above topics will be attempted and definite concrete suggestions offered for their handling, keeping in mind the idea of the greatest service which may be rendered the public and basing that service on the practitioner as the foundation.

First, this Association has done a great work in raising the standards of veterinary education. To maintain these standards will take the united efforts of the profession and, I believe, the practitioner will insist that they be kept up through requirements of state board examinations and basing practice acts upon these standards. If the profession is worth while entering, the level of the other professions is the lowest level we can accept and it is none too high at the present time considering the fields we are required to serve. Practitioners can be depended on to see that veterinary education maintains its standing so recently achieved. There is no complaint from practitioners that they have been taught too much; rather, no one realizes his shortcomings more than the man who has to answer the demands of general practice.

Whether it is sufficiently remunerative, however, to enter the profession at all is one of the questions running through many minds at this time. The practitioner has been made to meet these high requirements; but what protection has he been given after he has met them? He is turned out with his own native ability and acquired learning to cope with all sorts of discriminating circumstances. This Association has done a good work in raising the standards; but it has done practically nothing in aiding the practitioner; when once he has passed out of the school into his chosen field.

In recent editorials, we have been asked to recommend the profession to the prospective student. Many of us feel that we cannot conscientiously do this, and the present shortage of veterinary students is due directly to this feeling among the men who have been approached upon this subject. This feeling of what is coming next to take away the income from the practitioner, must be dispensed with and he must be encouraged if

he is to recommend the profession to those whom he could direct into our colleges.

There is no need to spend thousands of dollars in publicity, for it will be wasted; there is no need to send enticing appeals to high school graduates, for they will see "Doc" first before answering. Just back up the men the schools have already turned out and encourage them and our schools will automatically fill up. The faculties of our colleges are beginning to see that they must recommend their graduates to the live stock owners and they must protect them against encroachments if the schools are to maintain the quota of students desired.

It is said the law of supply and demand will operate. It is operating. We have veterinarians to spare in many sections now and none in others because the demand for the veterinarian has been lessened or at least not stimulated. The supply will be short; but if the public is taught to get along without veterinarians, the demand will not increase. As regards veterinary education, then standing behind the man already in the field is the only way to maintain a high type of veterinarian which our schools are now qualified to turn out.

The teaching of veterinary science in agricultural colleges is an activity of the profession with which this Association has not concerned itself, except that several years ago a committee was appointed to investigate the extent of such instruction offered and it reported only as to the amount of work which could be accredited towards a degree in a recognized veterinary college. It did nothing, by way of recommendation, with the work which was of such a character that it could not be accredited. This, in my mind, is the one issue which should have been handled, for it affects the profession as a whole; the other could be decided by the deans of the colleges.

There is a great deal of loose teaching of veterinary subjects in our agricultural colleges and I believe that the veterinarians engaged in this work would welcome some rulings in a general way from this Association. If they could say to their superiors that the American Veterinary Medical Association outlines the scope of such approved teaching, it would strengthen many men who would do differently. By some, it has been argued that in their states the live stock interests demanded some sort of instruction in so-called simplified veterinary science, due to shortage of veterinarians in certain parts of the state. What effort has been made to give those territories a county or district

veterinarian? That would be teaching the value of a veterinarian. Rather, they are teaching these people to get along without graduate veterinarians and incidentally they are seeding down the country with quacks, which will make the territory untenable for a graduate veterinarian. We can't make progress by resorting to retrogressive measures.

I suggest that this Association recommend that the teaching of veterinary science in agricultural colleges be limited to teaching subjects accredited towards a degree in a veterinary college and to other courses in veterinary sanitation and control of infectious diseases through the aid of veterinary assistance. The teaching of specific treatments should be discouraged, for treatments can be given properly only by one who is qualified through training and experience to recognize disease and treat it, which is taught in veterinary colleges only.

The Committee on Intelligence and Education has investigated the teaching of veterinary subjects in our veterinary colleges, but to my knowledge, the teaching of veterinary science in agricultural colleges has never been given serious attention. Why make the veterinary colleges meet a certain standard and their graduates comply with the requirements, and then let others carry on loose teaching and their students meet no requirements? Higher veterinary education is being attacked by these activities and it becomes the duty of this Association to take a stand in this matter, since it has taken upon itself regulatory authority in veterinary education.

If this loose teaching in our agricultural colleges affected only the areas not occupied by graduate veterinarians, it would not be so bad; but, unfortunately, it is not kept under control. We are bothered with it in states in which veterinarians abound and indeed about the only states not affected by it are those maintaining veterinary colleges and even in them the matter must be fought constantly. This question must be handled as a national issue for we do not live to ourselves. Areas formerly occupied by graduate veterinarians have been deserted through the demoralizing influence of some of the phases of this instruction in our agricultural colleges. Certainly the live stock owners will not benefit by such conditions and if we are to give them the highest type of veterinary service, such influence should be checked.

Closely related to the above question is the veterinary work of extension departments and States Relation Service. This is a

veterinary activity which could be made an asset to the practitioner and in some instances it is being made so by the extension veterinarian; in other cases it is being used to undo the profession and teach the veterinarian's client to get along without his services.

It is unbelievable that a farmer can be taught subjects in a few weeks or days, or in a single lecture, which are not taught in a veterinary college until the senior year. If the live stock owner can be taught such work intelligently, then it is foolish for veterinarians to be required to spend four or more years in college. If they can not, then it is dishonest to tell them they can and give them licenses making them think they are qualified to do their own veterinary work. Either the veterinarian or the farmer is being fooled. From my personal experience in doing this work and from my acquaintance with others who are now conducting such instruction, I judge that it is the latter. These courses are more or less a joke and the veterinarians doing this work feel that they are trying to do the impossible, for it is no pleasure to talk to men about matters which they can not comprehend.

The farmer vaccination schools in Iowa are probably the most advertised examples of this adventure. Here the farmers are collected for a few days and given lectures covering perhaps nine hours. During this time, they are given repeatedly the questions they will be asked on the examination and they are allowed their notes during the examination. What if veterinarians in our colleges were allowed to get by in such a fashion? Let us be honest with ourselves and with the interests which we serve.

The only possible results of such loose instruction is the multiplication of quacks and farmer vaccinators who experiment on their neighbors' hogs and make a wage at it, for no one will work for nothing. It is left to the veterinarian to see that this does not develop; but he knows that if he meddles in such matters he may as well move, so he lets the situation work itself out one way or the other. There are no state inspectors to enforce veterinary laws as there are for others.

Rather than try to control such activities, the profession should use its influence to correct the evil. I know of no way except through the veterinarians themselves engaged in these activities. If they will, they can convert all this work into a benefit to the profession. Some think that the laws require the work and they may as well do it as some one else. However, if those requesting this work could not influence veterinarians to do things which

the veterinarians themselves know are not right and not for the best interest of the profession and the live stock industry, these radical instigators would get nowhere with their political manoeuvres.

The American Veterinary Medical Association should outline a definite policy regarding such instruction which would help the veterinarians engaged in this instruction defend their position when asked to do things they should not. The suggestion I have made regarding teaching veterinary subjects in agricultural colleges, I make here too: That such instruction be limited to teaching principles of sanitation and control of infectious diseases through proper veterinary assistance. This could be made in the form of a recommendation rather than an arbitrary ruling.

Next, federal and state medicine are becoming a menace to the man in practice. I would not infer that these important veterinary activities are not essential. Their work is excellent and of far-reaching influence; but, surely, there is enough for all of us to do in our own spheres without interfering with the usefulness of each other. Federal and state veterinarians cannot take the practitioner's place in the service to the live stock industry; but they can make his business such that it will become unprofitable for him to stay in practice. The simple suggestion that I would make on behalf of the practitioner and for the best interest of the public welfare, is that federal and state activities be limited to doing such work that the practitioners can not do efficiently.

The most notable intrusion violating this principle is the work of federal and state departments in taking over the testing of cattle for tuberculosis. The accredited-herd plan was the first to require that only a veterinarian on full-time pay of the state or federal government be allowed to do the testing. The practitioner was enticed to influence his clients to sign up the agreements with the understanding that this work would be turned over to him. In full confidence in this purpose, he influenced perhaps ninety per cent of all signers of agreements to enter the plan. In other words, he created work for federal and state employees, simply that his client might receive indemnity for his reacting cattle, for there was an arbitrary ruling that indemnity would not be paid on the practitioners' test. To my knowledge, the live stock owners have never been consulted as to their choice in this matter.

After the accredited-herd plan had become popular through

the influence of the practicing veterinarians, it was extended from the breeders to owners of grade herds as well and to communities wishing milk ordinances requiring the tuberculin test. Still the work remained in the hands of the veterinarian employed by the federal or state government. Realizing that this limited testing would not control or eradicate tuberculosis, the work has now been extended to cover counties. Still, it is proposed in some states at least, that this work be kept in the hands of the full-time veterinarians. The man who did most of the missionary work in fostering the accredited-herd plan is thus left out of consideration, except that he is still promised that the testing will be turned over to him ultimately.

It is now proposed, however, that a county veterinarian do the area testing. Can we control this county veterinarian movement? In my opinion this step is entirely unnecessary in communities well supplied with veterinarians; yet it is being inaugurated in such states as Iowa and New York.

As I have shown, the practitioner has been fed up on promises, and if this work does not go into his hands, he will be justified in believing that he has been wronged. If his antagonism is aroused, this work will certainly fail and, I believe, federal and state officials are making a mistake in not taking the practicing accredited veterinarians into this movement. If they are qualified to take over accredited herds, they are qualified to run the initial tests.

I would recommend that accredited practicing veterinarians be used all that is possible in area testing, in cooperation with federal and state veterinarians, the latter acting as checks and doing supervisory work. In place of a county veterinarian in areas well supplied with veterinarians, I would suggest that this individual be given two or more counties, if possible, to keep away from localizing the office to the county. This plan would meet the approval of the practitioners and better satisfy the live stock owners, who, for the most part, want their veterinarians to do this work. All they are asking for is indemnity, not the free test, for they realize there is nothing free about it, the bill being paid through taxes. They prefer to call their local veterinarian when they can arrange to do the work, rather than line up a whole community for some particular time without any consideration for their convenience.

If appropriations are used only for indemnity, more cattle can be tested with the money. If indemnity is paid on the test of

one class of veterinarians, it should be paid on the others, or no indemnity paid at all, which would stop the work, for it is demanded by the owners of reacting cattle. By not paying indemnity on the test of practitioners, the government is encouraging dishonesty by influencing men not to tag and brand reactors. Further, it is discouraging testing.

In all other phases of federal and state activities as well, the government should abide by the simple rule of not transgressing into fields which can be handled by the qualified graduate veterinarian. That would be my suggestion, in a general way, that this Association recommend in behalf of the practitioners and for the best interest of veterinary service to the live stock industry.

Veterinarians in commercial institutions can do a great deal of good in directing veterinary activities into the hands of graduate veterinarians. It is becoming clear to many such concerns that the logical salesman of their goods, as well as administrator of their product, is the practicing graduate veterinarian. In fact, the whole fabric of the profession in its various fields is dependent on him for its stability. Like in many other branches of the profession, certain arbitrary rules cannot be laid down in the question of sales policy; but the ardent advocate of unprofessional business methods should not be tolerated. A definite policy recommending in so far as possible the keeping of veterinary commercial products in the hands of the graduate veterinarian should be instigated in the interest of keeping this work in the hands of the man who has qualified to serve the public good.

The practitioners themselves, in all the above considerations, come in for their share of criticism. In my opinion, the average ability of practitioners runs as high as that of veterinarians in other fields. There are poor men in all branches. The qualifications of each are the same. The practitioners in some instances have been criticised for not measuring up to the expectations of the profession; yet, the practitioners are just what the profession has made them and in criticising them in general, the whole profession is condemned. Rather, we should start with the graduate veterinarian as the lowest standard we can accept in veterinary service and build up the practitioners rather than substitute them with men of lesser training. This can be done by increasing the efficiency of the practitioner in any line in which he may be weak. Short courses in veterinary subjects for practitioners are being encouraged. They should be more definite, if anything, along some particular line needed, as for

example, a two-weeks course in milk inspection work, or longer, if necessary.

Rather than turn veterinary work over to laymen, because of the incompetency of some practitioners, it would seem more constructive if such men were required to meet certain requirements, as for example, the accredited-herd examinations. We have been going back 35 or more years in our development by resorting to retrogressive measures in order to meet the criticism of some practitioners. The whole profession is suffering as a result of such methods. Certainly, it becomes the duty of the American Veterinary Medical Association to decide on some basic standard for veterinary service and I suggest that the practitioner be taken as the foundation of that service to the live stock industry.

SUMMARY

1. The faculties of veterinary colleges, through the American Veterinary Medical Association, should use their influence to protect and encourage their graduates in practice and recommend them to the live stock industry.
2. The teaching of veterinary subjects in agricultural colleges should be limited to the teaching of principles of sanitation and the control of infectious diseases by proper veterinary assistance; and to teaching subjects accredited toward a veterinary degree; specific treatments of diseases should not be taught.
3. Extension departments should abide by the same rule. They should teach the farmer the proper appreciation of his veterinarian, rather than attempt to show him how to do his own work.
4. Federal and state activities should be limited to doing such work that the practitioners cannot do efficiently. Federal and state veterinarians could be placed only in areas not occupied by practitioners.
5. A definite policy recommending in so far as possible the keeping of veterinary commercial products in the hands of the graduate veterinarian, who has qualified to handle them, should be approved, as in the best interest of the live stock industry.
6. Practitioners themselves should be built up in their weak places and their efficiency increased rather than substituting them by men not trained as well. A definite plan for bettering the practitioners should be inaugurated by the American Veterinary Medical Association.

CONCLUSION

In response to invitations to practitioners from your President and Secretary, for definite suggestions for helping the practitioners, I hope I have submitted constructive, progressive and rational recommendations. It is only reasonable that if the graduate, practicing veterinarian must measure up to the high standard expected of him by this Association, he should be given its support. Did it ever appeal to you, that the practitioner is the only man in the profession who is subject to our code of ethics? The Bureau of Animal Industry may advertise as it pleases, an extension veterinarian may carry on a regular correspondence school for quacks, any other veterinarian than the practitioner may conduct his work independently of the code of ethics of this Association. Why should not the American Veterinary Medical Association place restrictions upon other fields of the profession?

If all veterinarians in all phases of our activities will do their part to encourage the man in practice, the future of the profession is bright. Since the practitioner occupies a place in the service of the community that no other member of the profession can fill, he should be taken as the foundation of that service. Undermine him and the whole structure will totter. These suggestions, I believe, have the endorsement of practitioners everywhere. The practitioner, we think, is and must remain the foundation of veterinary service.

DISCUSSION

DR. FERNEYHOUGH: I was very much impressed with that paper, and I wish to say that I have had the honor of being in Virginia, as an official, for a number of years. I would not care to hold a position down there unless I thought I had the practically unanimous vote of the veterinarians of the state.

Now, the Doctor touched there on a question that I am very much interested in. We have a written test course and if I am not mistaken (if I am wrong, Dr. Kiernan can correct me) we passed last year a regulation whereby we pay a certain amount of indemnity when the veterinarian makes the test.

At first I hesitated to ask the boys to take this accredited examination, but after thinking about it, I thought it was a pretty good thing. I appealed to the veterinarians of the state, and now there are very few veterinarians in the state who have not taken an accredited examination.

I had a chance recently, gentlemen, to test the value of the support of the practitioner in Virginia. It hasn't been very long since one of the most prominent men in Virginia questioned the test applied by the agent from the state office. He was sent there from the B. A. I. to test the herds of one of our United States Senators. I didn't know anything about the test until a week afterwards, when I was appealed to, to re-test these animals.

I said, "Upon what grounds?"

I told him there were only two things I would re-test for, if I thought there was anything wrong with the test at the time, and if I thought the man incompetent.

He said, "I say he is incompetent."

I said, "Your saying so doesn't make it so. You will have to prove it."

The first thing I did was to sit down and write to the practicing veterinarians in every community in which this man was testing. Every one wrote me nice letters and said as far as they knew this man's word was worth one hundred per cent.

I could find nothing wrong and I stood back. The thing was taken to the government; taken to the Live Stock Sanitary Association, into the courts and is still standing by.

Now, what I want to mention is this: The Virginia State Veterinary Medical Association met in Richmond, in January, and here is the resolution they offered and passed. They passed a resolution asking the Live Stock Sanitary Association to instruct the State Veterinarian to refuse to approve the work of any practitioner in Virginia who would knowingly re-test an animal passed by the state as a reactor. That is the report we get in Virginia. If a man gets those retested, he goes out of the state to do it.

This man finally found a man out of Virginia, who would do it. Thank God, it wasn't in Virginia. I carried him through the courts. I was enjoined once by the courts to show why. Finally I watched him. All you have to do is watch a rascal. You will find him out.

Gentlemen, stand by the man in the field. Let me tell you, you can make scientific men by training them, but God Almighty makes honest ones. Don't think because you are working for the B. A. I. that you are above doing a lot of little things. For God's sake, don't sell your birthright for a mess of pottage.

Dr. Steel brought out some mighty good things in that paper. I want to tell you, gentlemen, if you treat the practitioner right, he will stand by you. I have had to turn insurance men down. I had to turn a man down a year or two ago. Some one said, "Ferneyhough, he is after you."

I said, "Let him come. The bigger the man the harder he falls." (Laughter).

Sure enough, in the trial, this fellow walked up to me and said, "I want to see you a minute."

I said, "All right."

He said, "I want to tell you I am here to support you. You are right."

Men, you will get that. Men don't mind your disagreeing with them if you are right. Be right and be honest, but for God's sake, when a man attempts to get you to do a wrong thing and you know it is wrong, don't do it. Treat these practitioners right.

What is worth five dollars to get a practitioner to do, the same endorsement is worth a thousand to get an official to do. (Laughter). Take our good friend, Harry Caldwell—if his endorsement on a crooked deal would be worth five dollars, what would the endorsement of a Bureau man be worth? Ten times as much.

That was a mighty good paper and I think it is just a question of misunderstanding of one another. If we will all get together and treat the practitioner right, he will treat you right. I am very proud of your paper, and congratulate you. (Applause).

TRY THIS ON THE COW

(Letter received by a Kentucky physician. *Jour. A.M.A.*)

Dear Dr:—

Dr. Brown made an expiration picture of my stomach for \$25.00 one mo. ago and he says my manifold was hanging out of place so my grub won't pass thro. Send me some medicine for my trouble and I will pay you well.

CHARLEY B.

CONTROLLED VACCINATION EXPERIMENTS ON CATTLE WITH BACTERIUM ABORTUM¹

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INTRODUCTION

The possible value of live abortion germ vaccine in the control of bovine infectious abortion has been recognized since the early work of Bang¹ published in 1897. This investigator obtained definite protective results in experiments on sheep, goats and cattle. Later it was studied extensively and used in the field by McFadyean and Stockman,^{2,3} of the British Ministry of Agriculture. It is at present being distributed by this governmental agency to owners of live stock in England.

Experiments by Hadley⁴ of Wisconsin, Huddleson⁵ of Michigan, and the U. S. Bureau of Animal Industry, as reported by Schroeder,⁶ seem to show that its administration is followed by a lower incidence of abortion in the treated than in unvaccinated control animals. Thus, in Hadley's experiments of 127 unbred heifers vaccinated, 77.9 per cent calved normally while only 66.7 per cent of the controls did so. The best results were obtained in open cows which had never aborted. In this group the vaccine was 91.8 per cent effective, which was in marked contrast to 44.4 per cent of normal calvings for the controls. In open cows which had aborted, the vaccines were of little value, and, as was to be expected, in cows which were pregnant at the time of vaccination, but had never aborted, there was a higher percentage of abortions in the vaccinated than in the controls. The total vaccinated cattle from which these data were obtained numbered 439 head, of which 14.1 per cent aborted, while in the 101 controls 31.2 per cent aborted. The results varied in different groups; the highly favorable ones were obtained in the group consisting of open adult cows which had never aborted. The vaccinated cattle also showed a lower sterility rate and an increased breeding efficiency over the controls. Despite the comparatively large number of animals in the experiment, the writers warn against the danger of passing premature judgment on the value of any therapeutic agent for contagious abortion.

¹Presented at the sixtieth annual meeting of the American Veterinary Medical Association, Montreal, Canada, August 27-31, 1923.

²Drs. C. M. Haring and J. Traum participated in the planning of this work and Dr. J. Traum in its actual prosecution to September 1, 1922.

Huddleson's experiments cover a much smaller number of animals and they were not under such close observation, but he concludes in regard to Herd A: "These data apparently indicate a decrease in the abortion and sterility rate of the treated animals and a marked increase in the breeding efficiency of the treated over the untreated animals." In regard to his work on both herds A and B he states: "These data, while very suggestive, are too few to warrant final conclusions as to the value of vaccine treatment."

Schroeder's report covers twenty-three cattle which were part of a drove of sixty-six, none of which, according to the tests that could be made, as infected with bovine infectious abortion. Eleven received subcutaneous injection of pure living cultures of *Bacterium abortum* about two months before they were served by the bull. Four received repeated injections of killed cultures of the abortion organism after they had become pregnant, and eight were retained untreated as controls. The twenty-three cattle were equally and similarly exposed to abortion infection. The exposure was *via* the digestive tract and the material used was obtained from actual cases of infectious abortion. Of the eleven cows treated with live organisms before conception, ten calved normally and one aborted; of the four that received dead organisms, two calved normally and two aborted; seven of the eight controls aborted.

Despite the rather widespread use of this method in controlling abortion, it is generally considered to be still in the experimental stage. Careful investigation regarding its efficiency in controlled experiments, the deleterious effect of the use of this method on the vaccinated animals, the length of time the infected organisms remain viable in the animals, the effect on subsequent breeding and other questions, have been so rare that general confidence in the method and even the justification for its use, are open to severe question in the minds of many investigators and live stock sanitary authorities. Bovine infectious abortion is a self-limiting disease and, therefore, very good opportunity exists for any measure directed toward its control to gain credit for results which might have been identical, had nothing of a preventive nature been done. For this reason, only those experiments which have control animals can be given very much weight.

In the work on bovine infectious abortion which has been under way at this Station a prominent place has been given to

this phase of the subject. It was designed to furnish information on the important and still unsettled question of the actual value of live abortion organisms in producing immunity, to throw additional light on the localization of the injected bacteria, and to determine whether or not it is necessary, in the production of immunity in *Bacterium abortum* infection, to have actual multiplication and activity of the organism in the animal body, or whether it is an immunity that is conferred upon an animal simply as the result of having been infected with the disease.

It was expected that the investigation would also show the extent to which the infection, resulting from both the inoculation experiments to produce immunity and the ingestion experiments to produce infection, would be injurious to the animals infected and also to animals associated with them.

The following is a chronological history of the experiments:

GROUPS OF CATTLE

Three groups of female animals were used in the experiments, totaling forty-five head. Two experiment bulls were kept with these animals, in addition to which recourse to the dairy bull was obtained where mentioned. This bull has been with the dairy animals since August, 1917, and he, together with the other animals there, is free from *Bacterium abortum* infection, as determined by extensive blood tests and milk examinations. (Reported in Part III, Bulletin No. 353, of this Station).

Group I consisted of twenty animals and was the group used to determine the efficiency of live abortion organisms given in the form of vaccine in the prevention of abortion.

Group II consisted of fifteen animals and constituted the control group. Ten of them actually received infectious material to produce abortion and five were left as association animals.

Group III consisted of ten head to receive vaccine and no further treatment, in order to ascertain how long *Bacterium abortum* would remain in their bodies as a result of a single exposure by subcutaneous injection.

SOURCE OF CATTLE

These forty-five animals consisted of fifteen taken from the University dairy, all of which were known to be free from infection with *Bacterium abortum*, and five animals of beef strain which had been in our possession for several years, having been originally purchased as young heifers for tuberculosis experiments but not used. Twenty-five head were dairy heifers pur-

chased after a negative blood test from four herds with negative histories of abortion. Twenty-three of these were unbred. The two bulls were obtained from one of the certified dairies where they had been raised. They were about fifteen months old at time of purchase. The animals were assembled and kept for several months, with exceptions noted, and negative blood tests obtained in all cases before the experiments started.

DISTRIBUTION OF CATTLE

When the animals were divided into groups they were placed in separate fields as shown in Figure 1. These pastures that were used for the experiments constitute the north side of a canyon. The land is sloping and hilly and the drainage is in one direction, from the upper part of the illustration to the lower, into a creek which flows down the center of the canyon during the rainy season.

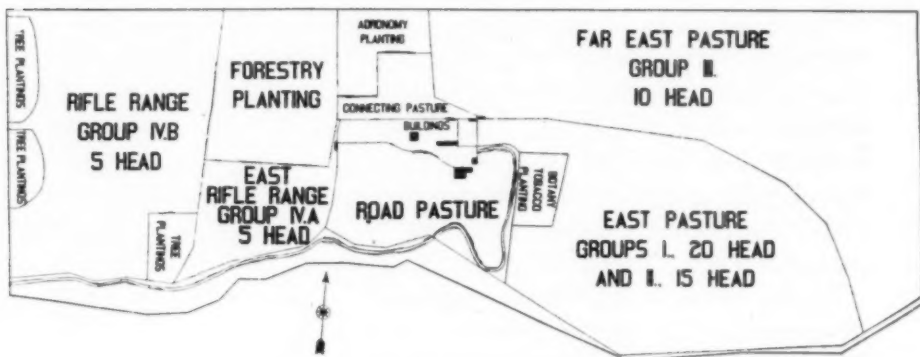


Fig. 1. Plot plan of buildings, corrals, and pastures in Strawberry Canyon, University of California, Berkeley, occupied by experiment cattle in abortion investigations. Total area approximately 125 acres.

Drainage from the far-east pasture can, therefore, run through the east pasture and from the connecting pasture into the area occupied by the buildings and the road pasture. The remainder of the land drains directly into the creek. These facts were kept in mind in placing the animals, so that infection from one group to another would not take place through the medium of drainage. The experiments covering the animals in Group IV, A and B, are not included in this report.

STARTING OF THE EXPERIMENT

The experiment was actually started on February 7, 1922. At that time fourteen animals, to constitute Group II, were given

a final examination for pregnancy preparatory to placing them in the far-east pasture (Figure 1) with the two bulls. One animal, 401-A, was found on rectal examination to be in early pregnancy which had not been recognized at time of purchase. One dairy animal, 2060, was definitely known to be pregnant to the dairy bull. One other dairy animal, 2304, definitely known to be pregnant to the dairy bull, was found to be too far advanced in pregnancy to remain in the experiment and was returned to the dairy. This left thirteen animals in this group. Two others were added later to make fifteen, the desired number. These two animals, 2298 and 436-A, respectively, were pregnant when added, the former being a dairy animal and the latter purchased with the animals for Group IV, not recorded in this report.

VACCINATION OF GROUPS I AND III

On the same date, February 7, 1922, the thirty animals in these two groups were placed together in the road pasture (Figure 1) and injected with live-abortion-germ vaccine. Each animal was given subcutaneously, at one point on the left side of the neck, twenty cc of the material. The area at which this injection was made was previously washed with a three per cent cresol solution as would be done in routine field practice. The animals were placed in the road pasture (Figure 1), so as to have the east pasture empty, as a separation area from Group II, to prevent the bulls in the latter group from attempting to get to them in case any showed evidence of estrum.

PREPARATION OF THE VACCINE

Four strains of the abortion organism were used in making up this suspension. Two of these, A and 80, were old laboratory bovine strains which grew very rapidly and heavily on culture media. One was a strain recently obtained from live-abortion-germ vaccine, put out by a commercial firm in this country, and the fourth, 101, was a strain recently isolated in this laboratory from an aborted bovine fetus. The cultures were grown on glucose-glycerine bouillon and glucose-glycerine agar, the growth on the latter being washed off and used to enforce the bouillon cultures. Subcultures were made and smears stained from each of the flasks which showed them to be pure cultures of the organism. All of the strains were known to be pathogenic for guinea pigs. The suspensions of the organisms were tested with a silica comparator standard, using Pear's precipitated fullers' earth so that it contained four billion organisms per cc. The

technique of this preparation is given in the turbidity standard of the "Standard Methods of Water Analysis," by the American Public Health Association, as used by Butterfield and Neill⁷ in the Hygienic Laboratory in their work on various strains of meningococci.

EFFECTS OF THE VACCINATION

The day following the injection a cold rain storm started and lasted four days. Practically all of the animals had a more or less marked reaction, probably exaggerated by the bad weather conditions. They stood about humped up in the pasture and ate very little. Alfalfa hay was being fed to them at the time. By February 11, 1922, they were all eating normally and on the following day the weather had cleared and they appeared to have recovered from the effects of the vaccination. However, local swellings were present at the point of injection in all of the animals. In the majority of cases these increased in size over several weeks and involved the prescapular lymph gland on that side in a number of the cattle.

On March 10th, the following condition was found on examination of the point of injection of the vaccine in these animals:

- No. 3219—Normal.
- No. 407-A—Normal.
- No. 418-A—Enlarged gland, $3\frac{1}{2}$ ".
- No. 410-A—Enlarged gland, $2\frac{1}{2}$ ".
- No. 2182—Large abscess.
- No. 4-A—Large abscess. Opened naturally. Material was taken for cultures.
- No. 429-A—Large abscess. 6" x 4". Opened.
- No. 2305—Gland slightly enlarged.
- No. 402-A—Had opened naturally.
- No. 2321—Normal.
- No. 2318—Enlarged gland.
- No. 434-A—Had opened naturally.
- No. 405-A—Normal.
- No. 403-A—Normal.
- No. 415-A—Small abscess.
- No. 408-A—Gland enlarged and hard.
- No. 406-A—Enlarged gland.
- No. 424-A—Enlarged gland.
- No. 414-A—Soft abscess.
- No. 404-A—Gland enlarged, 2" x 2".
- No. 25-A—Large soft abscess, 4" x 6" x 3". Opened by incision and material taken for cultures.
- No. 2314—Had opened naturally.
- No. 426-A—Had opened naturally.
- No. 433-A—Slight swelling.
- No. 2297—Enlarged gland.
- No. 2313—Had opened naturally.
- No. 2315—Enlarged gland.
- No. 413—Enlarged gland.
- No. 419-A—Enlarged gland.
- No. 421-A—Had opened naturally.

The animals at the time were not in nearly as good condition as the fourteen controls in Group II. The pus from the abscesses was identical in all cases, being thick yellowish-white in appearance. It was obvious that it had been caused by the inoculation. This condition probably would have been avoided to a considerable extent had the injection been made in several areas, instead of placing the entire twenty-cc dose at one point. Pus was collected from the abscesses on Cows 4-A and 25-A. Cultures made from this material on cooked-blood agar and fetus media developed pure cultures of *Bacterium abortum* from Cow 4-A and *Bacterium abortum* with some contamination from Cow 25-A. Blood samples were taken from these animals on February 21, 1922, and all gave a positive reaction to the agglutination test.

ONE ANIMAL VACCINATED WHEN PREGNANT

At the time of the vaccination, one of the dairy heifers, No. 2318, was pregnant, but it was not known, although later, when a diagnosis of pregnancy was made, a history was obtained of her having had opportunity to be bred by the dairy bull. She was vaccinated while pregnant and later aborted before the infectious material was given, finally going into Group III, and will be discussed later.

BULLS CHANGED FROM GROUP II TO GROUPS I AND III

On April 10, 1922, sixty-two days after the vaccination, the bulls were taken from Group II and started to breed the animals in Groups I and II. In Group II animals Nos. 2060 and 401-A were pregnant when the experiment started. During the sixty-two-day period eight of the remaining eleven became pregnant. Nos. 183, 2317 and 430-A did not become pregnant and were later bred to the dairy bull, conceiving without difficulty. It is quite probable that they did not come in estrum during the sixty-two-day period, as feed conditions in the pasture were not very good and the weather was cold and rainy. Except for the one night of April 10, 1922, the bulls were kept corralled in order to hand-breed the animals in Groups I and II, so as to have the breeding dates. The animals in these groups, although they had apparently entirely recovered from the effect of the vaccination, came in heat slowly. The following breedings took place:

Bull 412-A—Bred on April 18, 1922, to No. 433-A.
Bred on April 19, 1922, to No. 4-A
Bred on April 20, 1922, to No. 2314
Bred on April 20, 1922, to No. 403-A

	Bred on April 22, 1922, to No. 408-A
	Bred on April 23, 1922, to No. 2297
	Bred on April 26, 1922, to No. 421-A
	Bred on April 27, 1922, to No. 428-A
	Bred on April 27, 1922, to No. 2182
	Bred on May 3, 1922, to No. 410-A
	Bred on May 11, 1922, to No. 424-A
Bull 411-A—	Bred on April 21, 1922, to No. 25-A
	Bred on April 27, 1922, to No. 407-A
	Bred on April 27, 1922, to No. 406-A
	Bred on April 29, 1922, to No. 414-A
	Bred on April 29, 1922, to No. 434-A
	Bred on May 1, 1922, to No. 418-A
	Bred on May 19, 1922, to No. 405-A

When the breeding was started all of the animals were placed in the east pasture, where there was good green feed, and after they were bred they were removed to the road pasture.

HISTORY OF HEIFER 2318 VACCINATED WHEN PREGNANT

On May 12, 1922, on account of the animals breeding slowly, seventeen only having been bred and time being an important factor, due to the control animals being pregnant, a rectal examination was made of the thirteen unbred animals, the ovaries were massaged and the corpora lutea expressed from Nos. 426-A, 404-A, 405-A, 419-A and 420-A. At this time No. 2318 was found to be about five months pregnant, and in looking up her history it was recorded that she had been in the dairy pasture where the dairy bull was given exercise in December, 1921, prior to going into the experiment. She was, therefore, turned out with the bred heifers, although she had been vaccinated on February 7, when about two months pregnant.

On May 18, in the morning, the unbred heifers in the east pasture got through an open gate into the road pasture with the unbred heifers of the same groups. While the attendant was arranging gates in the corral, where the animals had been brought with the bulls prior to separating them into bred and unbred groups, Bull 412 was observed to breed this heifer and she was found to have a vaginal discharge. The laboratory was notified and upon making a rectal examination the uterus was found to be empty. The hand could be easily passed into the vagina and it contained a muco-purulent material streaked with blood, a handful of which was withdrawn and placed in a sterilized tube. The cervix was open sufficiently to admit two fingers. On massaging the uterus per rectum with the other hand in the vagina, cupped over the cervix, some shreds of tissue with blood clots were expressed from it and placed in a second sterile tube. An effort was made to demonstrate *Bacterium*

abortum by microscopic examination, but it was poor material to use for this purpose and the organism could not be demonstrated. Two guinea pigs, Nos. 2221 and 2222, were injected intra-abdominally with a salt solution suspension of the tissue, but both were found to be normal when killed and examined August 2, 1922.

This animal had definitely aborted between May 12, when she was found to be five months pregnant, and May 18, when she was seen to accept service from the bull. During this period the unbred heifers were being corralled twice daily with the bulls, but the bred heifers were not being closely watched. No evidence of the aborted fetus or membranes could be found on a careful search of the road pasture but this was to be expected as the area is hilly and covered with brush growth in some places. Small predatory animals, including coyotes, infest the area. In examining for pregnancy May 12, a rectal examination only was made. We therefore feel that abortion in this case was due to the vaccination.

This animal was continued in the experiment, later becoming a part of Group III. She did not become pregnant to the service on May 18, but after she became a part of Group III, on June 24, 1922.

CHANGING OF GROUPS PRIOR TO INFECTION

On June 24, 1922, ten animals in Group II were examined per rectum and found to be definitely pregnant. These constituted the controls in this group to receive infection. The other three, Nos. 183, 430-A and 2317, not impregnated during the period from February 7 to April 10, and not exposed in any way to infection, had been removed to the dairy pasture to be bred as previously mentioned and later returned with Nos. 2298 and 436-A to constitute the five uninfected controls or association animals of Group II.

Twenty bred heifers of the thirty vaccinated animals were separated to constitute Group I. They were examined for pregnancy but some of them had been too recently bred for this to be of any value. The result of this examination is given in the following list:

No. 434-A.....	Bred April 29	Pregnant
No. 2314.....	Bred April 20	Pregnant
No. 2305.....	Bred May 25	?
No. 414-A.....	Bred April 29	Pregnant
No. 408-A.....	Bred April 22	Pregnant
No. 433-A.....	Bred April 18	Pregnant

No. 424-A.....	Bred May 11	?
No. 2182.....	Bred April 27	Pregnant
No. 410-A.....	Bred May 3	Pregnant
No. 25-A.....	Bred April 21	Pregnant
No. 407-A.....	Bred April 27	?
No. 403-A.....	Bred April 20 and June 3	?
No. 4-A.....	Bred April 19	Pregnant
No. 428-A.....	Bred April 27	Pregnant
No. 418-A.....	Bred May 1	Pregnant
No. 415-A.....	Bred June 10	?
No. 421-A.....	Bred April 26 and June 3	?
No. 405-A.....	Bred May 19 and June 19	?
No. 426-A.....	Bred June 24	?
No. 404-A.....	Bred June 20.	?

A rectal examination only was made, as most of them were heifers and to get the hand into the vagina was difficult or impossible. We also hold the opinion that, under certain unrecognized conditions, bimanual examination in a small percentage of cases may be the cause of abortion. (See Article III, Bulletin No. 353, of this Station).

Of this group Cows 405-A, 415-A and 428-A were later found not to have been pregnant. No. 428-A, on June 24, was thought to be pregnant, having been bred on April 27, fifty-eight days prior to the examination. It is thought, however, that this diagnosis of pregnancy was an error, rather than that she aborted, as she was being daily observed with other animals in the group and was seen to be in heat on August 5.

The ten pregnant control animals to receive infection were taken from the far-east pasture and placed with the twenty animals in Group I in the corral. The ten remaining vaccinated animals constituting Group III were then placed in the far-east pasture, which up to this time had not contained any infected animals. They were left in this pasture for the remainder of the experiment, thus being kept free from any infection except that given them by the vaccination on February 7, 1922. At this time only one of them, No. 413-A, was pregnant. Both bulls were placed in the pasture with this group.

The thirty animals, constituting the entire twenty head of Group I and the ten controls to receive infection in Group II, were kept corralled from June 24 to June 26. This was done with the object of controlling their water supply, expecting they would drink from the watering-trough the infectious material to be given them on the later date.

PREPARATION OF THE INFECTIOUS MATERIAL

Eight gallons of milk were received from the University Farm, Davis, from cows in experiments being carried on by Hayes

and Barger and known to contain *Bacterium abortum* in their milk. To test this particular milk 800 cc were centrifuged and the sediment inoculated intra-abdominally into the guinea pigs Nos. 2334 and 2335. No. 2334 died on July 13 but was not autopsied. No. 2335 was killed August 24 and on autopsy found to have extensive lesions of abortion. Its blood gave a positive agglutination test.

The following material from bovine fetuses, which had been received at the laboratory and found to contain *Bacterium abortum*, was mixed in salt solution to a volume of one gallon:

Fetus Number	Lungs	Stomach Contents	Intestinal Contents	On Ice Since
32	x	x	x	May 13
33	x			May 30
35	x	x		May 25
37	x	x		June 1
38	x	x		June 12
40	x	x		June 15

A bottle, capacity one gallon, was used to contain 1250 cc of glycerine-glucose-broth culture of *Bacterium abortum* strain 4-A. Also, the surface growth of strain 80, on thirteen bottles of glycerine-glucose agar, washed off with salt solution. Strain 4-A was isolated from the abscess of Cow 4-A following vaccination and 80 was an old laboratory bovine strain.

Another gallon bottle was used to contain 200 cc of broth culture of strain 118, isolated in this laboratory March 10, 1922, from fetus 18.

A third gallon bottle was used to contain surface growth on fetus-media agar, washed off with salt solution, of strains of *Bacterium abortum* recently isolated from fetuses 10, 20, 35, 37, 38 and 40.

A fourth gallon bottle was used to contain strains of *Bacterium abortum* on solid and liquid media isolated from guinea pigs inoculated with tissues of infected fetuses Nos. 3, 10, 11 and 18.

There was thus a mixture of eight gallons of infected milk, one gallon of infected fetus tissues in salt solution, and four gallon bottles containing cultures and filled to a gallon volume with water at the time of the infection, 6:30 to 9:30 p. m., June 26, 1922.

METHOD OF INFECTING THE ANIMALS

The evening was foggy and the infection was delayed until late in the day in order that the material would not be exposed to strong light during the process. An effort was made to mix the material in the drinking water and have the animals drink

it from the trough. On account of discoloration of the water from the milk and a slight odor from the fetus material, the animals would not drink although they had had little water for the previous forty-eight hours. They were then placed in the chute and drenched. The drenching mixture was made by taking 500 cc from each of the five one-gallon bottles and 500 cc of milk, making a total of 3000 cc, of which mixture each cow was drenched with one pint. The remainder of the infectious material was placed in the watering-trough, baled alfalfa hay opened and the flakes soaked in the trough until the solution was all absorbed. It was then spread around the corral for the animals to eat. They had not been previously fed on that day and no difficulty was experienced in getting them to eat the hay. The following morning the animals were turned into the east pasture, the watering-trough disinfected and no further exposure to infection was given. Fourteen days later, on July 10, blood was drawn from these animals and all ten of the controls, which up to the time of infection, on June 26, gave a continuous negative reaction, now showed a positive reaction indicating they had been infected with *Bacterium abortus* by the method used.

SUBSEQUENT HISTORY OF ANIMALS IN GROUP II

Six of the ten animals aborted from fifty-eight to eighty-eight days following the infection. No. 2060 calved normally ten days afterwards, which was too soon for infection of the uterus to have taken place. No. 401-A calved twenty-seven days after the infection. The calf was weak but lived. The placenta was retained and on removal and examination abortion organisms were found in great numbers in smears and cultures. They were present also in the colostrum. The existing pregnancies of Nos. 2312 and 26-A were apparently not affected by the infectious material and both animals calved normally on the same day, one hundred and sixty-two days after the infection. The examination of the agglutination reaction of these animals showed quite definitely that they became infected, but overcame it and remained entirely negative to the agglutination test.

Two animals in this group, Nos. 2060 and 401-A, were much further advanced in pregnancy at the time of infection than any animals in Group I. The six animals that actually aborted, however, were only about one month further advanced than a number of animals of Group I. The bulls were with these animals from February 7 to April 10 and then turned with Group I, a

number of which were bred during that month. We do not think, therefore, that this difference in the period of gestation had any marked effect on the results obtained.

SUBSEQUENT HISTORY OF ANIMALS IN GROUP I

All of the seventeen animals in this group that became pregnant carried their calves to term except No. 407-A which was accidentally killed in the last month of gestation. In this animal the pregnancy was progressing normally and no evidence of abortion infection could be found in her tissues, the examination of which will be discussed later.

The following examination was made of the fetus from cow 407-A accidentally killed:

Fetus—Black and white, female, normal, eight months gestation.

Dam—407-A. Fetus was removed from uterus after death of dam, due to broken neck.

Externally—Fetus was normal.

Internally—Tissues normal.

Heart—Few petechial hemorrhages on myocardium of ventricles.

Stomachs—Distended with a viscid, faintly-clouded fluid, which showed no evidence of being stained with meconium.

Rectum—Meconium made up of firm, mucous-coated pellets, greenish in color.

Cultures were made from—

Heart-blood—Negative.

Lung—Negative.

Liver—Negative.

Spleen—Negative.

Stomach contents—Negative.

Small intestine—Negative.

Meconium (rectum)—Negative.

Blood serum of the calf was negative.

Smears were made from stomach contents—Negative.

Guinea pig 2783—Injected with stomach contents. Killed February 12, 1923—Negative.

Guinea pig 2774—Injected with extract of the lung, liver and spleen. Killed February 13, 1923—Negative.

All of the animals in this group passed the placenta normally except Nos. 433-A and 2305. The former animal calved at 9 a. m. and as the placenta was desired for examination, it was manually removed at 11 a. m. Some of the cotyledons in the apex of the pregnant horn were markedly adherent. This after-birth, however, might have passed normally had more time been given.

No. 2305 calved at 11 a. m., with assistance from the attendant, after having been in labor since 7 a. m. This was a small heifer and the calf was large and expelled dead. Post-mortem examination showed the lungs had not been inflated. While it was an anterior presentation, death may have occurred during parturition or may have resulted from inflammation of the placenta

which was present. The following day at 11 a. m. part of the placenta was protruding from the vagina and was torn off and placed in a sterile can by the attendant. At 2 p. m. more was protruding from the vagina until it nearly reached the floor. On removing this and making an examination of the inside of the uterus, parts of it were still found adherent to the maternal cotyledons and there was considerable discharge from the uterus. This was, therefore, a definite case of retained placenta. Three days later the heifer was again examined and shreds of the placenta were still attached to the uterus.

The first two guinea pigs inoculated with placental material died in forty-eight hours. Two others were then inoculated with uterine exudate. One of these also died in forty-eight hours but the other lived. This latter was finally killed at the end of six weeks and was negative for *Bacterium abortum*.

Laboratory examination of calf born dead, from dam No. 2305:

Color—Black and white. Sex—Male.

Calf was expelled dead 11 a. m., February 27, 1923.

Calf was apparently mature and well developed.

Calf brought to laboratory 2 p. m.

Post-mortem:

Externally—Calf normal.

Internally—Tissues appeared normal.

Heart—Base of ventricles heavily spotted with petechial hemorrhages.

Lungs—Normal, not inflated.

Liver, spleen and kidney—Normal.

Stomachs—Filled with a clear mucus which was normal.

Intestines—Showed normal meconium.

Bacteriology:

Heart-blood—Negative.

Lung—Negative.

Spleen—Negative.

Liver—Negative.

Stomach contents—Negative.

Small intestine—Negative.

Large intestine—Negative.

Meconium (rectum)—Negative.

Guinea pig 2883—Extract from lung, liver, spleen. Killed April 15, 1923. Negative.

Guinea pig 2884—Stomach contents. Killed April 15, 1923. Negative.

Smears: Lung—Negative. Stomach contents—Negative.

The only other calf deserving mention was from No. 418-A. This calf was expelled with the placenta and the umbilical vessels remained intact. Birth occurred about 5 a. m. and the attendant was not present until 6 a. m., when the calf was found as described. It was alive, but very dull. The umbilical vessels were severed and the calf died about one-half hour later.

Laboratory examination of calf, which died soon after birth, from dam 418-A:

Color—Black and white.

Sex—Female.

Born—February 2, 1923.

Post-mortem:

Externally—Calf normal.

Internally—Tissues appeared normal.

Lungs—Perfectly inflated.

Stomachs—Filled with a faintly-clouded mucus, which was apparently normal.

Intestines—Showed normal meconium.

Cultures were made from the following:

Heart-blood—Negative.

Lung—Negative.

Spleen—Negative.

Liver—Negative.

Stomach contents—Negative.

Small intestine—Gram-negative, slender rod. *Bact. coli*.

Meconium (rectum)—Negative.

Blood serum—Negative.

Guinea pig 2897—Extract from lung, liver, spleen. Died February 13, 1923. *Bact. coli* in heart-blood. Lungs congested.

Guinea pig 2898—Stomach contents. Killed March 19, 1923. Negative.

The colostrum for injecting the guinea pigs was obtained in sterile, quart jars immediately after calving. From a few hundred cc to one liter was taken in each case, some being collected from each of the four teats. This was brought to the laboratory and centrifuged in 100-cc centrifuge tubes for twenty minutes. Some of the fat from the surface of one tube and the sediment in the bottom of same were mixed together and one cc injected intra-abdominally into each guinea pig.

The entire placenta, or as much of it as could be collected in each case, was placed in a sterile, covered, one-gallon can and brought to the laboratory. In case it was soiled with manure or bedding it was washed in tap water. Following this it was spread out on a tray and a careful examination made of the cotyledons for any evidence of necrotic, hemorrhagic or other abnormal areas. Material for guinea-pig injection was always taken from the most suspicious looking areas. Parts of the tufts of several cotyledons were removed with scissors, ground up in a mortar with sterile salt solution and 1 cc of the material injected intra-abdominally into each guinea pig.

Stained smears from the cotyledons were also examined microscopically in each case.

It will be observed that all of these placentae were negative for *Bacterium abortum*, while samples of the colostrum from four of the animals contained the organism. This would suggest that vaccinated animals are not very liable to expel the organism from the genital tract at parturition following vaccination.

These experiments confirm the fact that in persistent carriers, the udder is the seat of such infection. No conclusion can be drawn, however, as to whether the udder infection in these four cases resulted from the vaccination or from the infection by ingestion.

ASSOCIATION ANIMALS OF GROUP II

The five animals constituting the uninfected controls in Group II consisted of Nos. 183, 430-A, 2317, 2298 and 436-A. The first three of these animals had been with Group II in the far-east pasture, while they were being bred from February 7, 1922, to April 10, 1922, but did not become pregnant. The bulls were removed from this group on April 10 and used to breed animals in Groups I and III until June 24, 1922. On May 3, 1922, No. 183 was in heat. She was moved to the dairy, bred to the dairy bull and conceived. At this time Nos. 2317 and 430-A were also taken to the dairy for breeding. On July 25, 1922, No. 183, then definitely known to be pregnant to the service of May 3, and No. 2298, a pregnant dairy animal, were added to Groups I and II. August 10, 1922, No. 2317, then definitely pregnant to the dairy bull, and No. 430-A, recently bred to him, were also added. This group was still one animal short and No. 436-A, which had been purchased in August, with eleven animals of Group IV, and known to be in early pregnancy at the time, was added on September 26, 1922. The abortions in the ten infected controls of Group II actually took place between August 21, 1922 and September 20, 1922. All of the uninfected controls were in direct association with these animals during all of the period except No. 436-A, which was added five days after the last actual abortion occurred. All of these five association animals carried their calves to term. Guinea pigs were inoculated with colostrum and placenta from each animal, and *Bacterium abortum* was found in the placenta of No. 183 and in the colostrum of Nos. 2298, 2317 and 430-A.

In studying the agglutination tests of these animals it is interesting to note how the agglutination titre of No. 2298 gradually increased and that of No. 183 remained entirely negative. This latter animal furnishes another example of how the agglutination test may fail to detect a spreader of the organism. No. 430-A gave very slight indication of reaction to the agglutination test and No. 2317, although showing much better evidence of infection in the tests made November 10, 1922 and March 23, 1923, did not at any time develop a definitely positive reaction.

SUBSEQUENT HISTORY OF ANIMALS IN GROUP III

In regard to these animals it should be understood that they were vaccinated on February 7, 1922, with the twenty animals in Group I. They were associated with this group during the sixty-two days following vaccination to April 10, 1922, and also during the breeding period of these groups from April 10, 1922, to June 24, 1922, two days before the infection of Group I and the ten infected controls of Group II. On June 24, 1922, an effort was made to get twenty bred animals from the thirty head to make up Group I, so that the infection experiments could proceed. Only seventeen head of the twenty so selected were actually pregnant, although all twenty had a definite history of having been bred. Of the ten head remaining, which went into Group III, only one was pregnant at the time, No. 413-A. When the bulls were taken from Group II and started to breed the animals in Groups I and III, on April 10, they were allowed in the pasture with the animals for that one afternoon and night, after which they were kept corralled in order to have breeding dates. This heifer was bred at the time but the fact was not recorded.

The animals in this group were transferred to the far-east pasture with both bulls and the latter were left with them from June 24 to September 26, 1922. At that time they were examined, and only four, Nos. 2321, 2318, 2297 and 413-A, were found to be pregnant. Since not all the animals were pregnant, bull 411 was left with them, but No. 412 was removed and added to a fourth group not covered by this report.

The animals in Group III were again examined on November 20, 1922, and the above four were the only ones that were pregnant. They were all in good condition for animals on range at that time of the year. They were again examined on December 29, 1922, with the same result.

On February 5, 1922, bull 411-A was in poor condition. He was removed from the group and added to the pregnant animals in Groups I and II, which were corralled around the buildings, so that he could be fed hay. Bull 412, which had been with five heifers in Group IV, was in very good condition and was added to Group III.

One week later, bull 412 jumped the fence from the far-east to the east pasture and bred cow 20-A, an infected control in Group II, which had aborted on September 10, 1922. On that

date both bulls were corralled in a special corral built for them in the connecting pasture. (Figure 1).

The animals in Group III had been in continuous association with one or both bulls from April 10, 1922, to February 12, 1923, a period of approximately ten months, and only four of the ten had become pregnant, as shown by an examination of the group for pregnancy on February 26, 1923. From February 12 to May 1, 1923, when no bull was in the pasture with these animals two were seen to be in heat and were corralled and bred to bull 412 as follows: No. 2315 on April 29, and No. 2313 on May 9.

The far-east pasture in which these animals were kept is large, rough and mountainous with considerable brush growth on the hillsides. They were not, therefore, under very close observation during all of this period. It would have been possible for them to have become pregnant and aborted without being observed. We do not feel, however, that this occurred, because of the repeated negative examinations for pregnancy made during the period. It is also improbable that abortions occurred in any of the six animals before a diagnosis of pregnancy was made and did not occur in any of the four animals in which pregnancy was early diagnosed. The results obtained with the animals in Group I further substantiate the improbability of any of these animals having aborted.

The peculiar result in Groups I and III is that of the thirty vaccinated animals only twenty-one were successfully impregnated. Six of the nine which did not become impregnated were constantly in association with one or two bulls for nearly a year; the other three for the period from April 10 to June 24, 1922. Practically no difficulty was experienced in getting the control animals bred. All of the animals that failed to get with calf had never been pregnant and they were the youngest heifers. The only difference in the treatment of these animals from the others is that they received an injection of living *Bacterium abortum* organisms. Continued effort will be made to get these animals with calf. However, if the vaccination was the cause of this condition it should be considered a serious result of its application. Thirty per cent of non-breeders in vaccinated animals would materially offset the value shown by the treatment to prevent abortion in the injected animals that did become pregnant. The four animals in this group which became pregnant calved normally, No. 413-A on January 17, Nos. 2297 and 2318 on April 6, and No. 2321 on May 14. Guinea pigs injected with

colostrum and placenta extract from these animals showed no evidence of abortion infection.

STUDY OF BODY TISSUES FOR PRESENCE OF BACTERIUM ABORTUM IN VACCINATED ANIMALS

To date complete bacteriological examinations, including guinea-pig inoculation for the presence of *Bacterium abortum*, have been made of the tissues of five vaccinated animals. Three were from Group I and had been vaccinated and infected, and two from Group III, one of which had been exposed in no other way except by vaccination.

The bacteriological examination showed that all of the cultures and guinea pigs inoculated from the tissues of these five animals were negative for *Bacterium abortum*. The colostrum of No. 421-A was positive for *Bacterium abortum* at the time of calving, March 6, 1923. This fact was not known at the time of slaughter, March 23, but only after the guinea pigs inoculated with her colostrum at time of calving were killed on April 25, 1923. At time of slaughter a sample of milk or part of the udder was not taken, but the supramammary lymph glands were removed and from them cultures made and one guinea pig inoculated. She must, therefore, be considered as an animal having infection in the udder only.

DISCUSSION

A study of the data on the forty-five female animals in Groups I, II and III shows evidence favorable, as well as unfavorable, to the field use of live-abortion-germ vaccine.

The favorable evidence consists in the fact that the seventeen vaccinated animals in Group I that became pregnant all carried their calves to term except one which was accidentally killed in the last month of gestation and in this case the pregnancy was progressing normally. These animals were subjected to the same infection by ingestion as the ten pregnant animals in Group II, six of which aborted in from fifty-eight to eighty-eight days following the exposure, one calved too soon for infection of the uterus to have taken place and one calved with infection of the uterus present but pregnancy terminated before abortion could have occurred.

An examination of the placentae of the seventeen pregnant animals in Group I showed no evidence of *Bacterium abortum*. The organism was, however, found in the colostrum of four of the animals.

A rather complete bacteriological examination, including guinea-pig injection, of the tissues of three of the animals of this group (one of which died and two of which were killed) failed to show the presence of the organism in their bodies. There may be some question as to whether the technique of this search was sufficiently elaborate.

No. 421-A a few weeks prior to slaughter had shown the presence of the organism in her colostrum. The tests of her blood, however, and also that of No. 424-A were showing a diminution in the amount of agglutinins present as evidenced by an entirely negative reaction in dilutions above 1-25.

No. 407-A, the animal that was accidentally killed, was a very positive reactor to the agglutination test in all four dilutions. On the two tests previous to her death, there was no agglutination in the last tube and blood taken after death on December 28, gave a negative reaction in the last two tubes.

Methods for recovering *Bacterium abortum* similar to those used in these cases have been successful in isolating it on a number of occasions in our laboratory.

The four animals in Group III which were exposed to infection only by vaccination, calved normally and no abortion organisms were found in the placentae or colostrum. One of these animals, No. 2318, was vaccinated while pregnant, February 7, 1922, aborted between May 12 and May 18, 1922, conceived again shortly after June 24, 1922, and calved normally April 6, 1923. At the time of abortion, the fetus and placenta were not available. The uterine discharge, however, failed to show any abortion organisms. Two, Nos. 413-A and 2297, were killed some weeks after calving. A rather complete bacteriological examination, together with guinea-pig injection, of their tissues failed to show any evidence of the presence of *Bacterium abortum*. This would tend to show that animals at the time of parturition following the vaccination are not eliminating the organism from the genital tract. When vaccinated and infected, they are not nearly as liable to be spreaders at the time of parturition as is the case with the unvaccinated infected and association animals.

The unfavorable evidence in this series of experiments is the fact that of the thirty vaccinated animals, only twenty-one became pregnant. No reason for the failure to get with calf of the other nine, constituting 30 per cent of the animals, can be

given except the vaccination. Should this be the case generally with vaccinated heifers, it would mean a serious loss.

Following the vaccination, local swellings developed in all of the animals, many of them resulting in abscesses, which broke and discharged pus. This material contained *Bacterium abortum* in large numbers. While vaccination may be carried out with a much lower incidence of abscess formation than occurred with our experiment cattle, when it does occur it must be assumed that the organisms will be spread for weeks with the discharge from such areas.

In this experimental work, the groups were handled under artificial conditions in order that all of the animals might be vaccinated at one time. This would not prevail under practical conditions in the field, and, in the average dairy, to get all the breeding animals vaccinated would require the greater part of a year.

Once abortion appears in a herd, the pregnancies of the remainder of the animals are liable to be terminated prematurely by infection. Vaccination cannot be carried out until the uterus is empty. In this respect the vaccine differs from other biological products which can be used on all the exposed animals at once. This condition limits its field of usefulness at best and brings out clearly the need for the application of other measures when practicable. Among such should be mentioned the application of the agglutination or complement-fixation test and removal of reactors where the percentage of infection is small, or a plan of isolation at time of parturition or abortion and disinfection where it is not practicable to remove reactors.

The fact that the four of the five association animals that became infected were all exposed during the actual abortions in the control group, while the one which was not added until five days after the last abortion failed to pick up the infection, is significant. All of these four association animals carried their calves to term, which is evidence that, under natural infection, the period of time required for the production of abortion is longer than when massive infection is given artificially.

The evidence tends to show that in the production of immunity in this infection, it is not necessary to have permanent multiplication and activity of the organism in the animal body and that immunity is conferred as a result of the animal having been infected with cultures of the causative agent. This immunity, however, does not necessarily destroy all of the organisms

in the body and the point where infection will most likely remain is the udder.

These experimental animals are being carried through a second pregnancy at present and further data on the duration of the immunity will be accumulated.

CONCLUSIONS

The above experiments clearly demonstrate the value of living cultures of *Bacterium abortum* in preventing abortion in the vaccinated animals when subjected to identical infection that produced abortion in the controls.

Nine of the thirty vaccinated animals have to date failed to conceive. No other explanation can be offered for this sterility except the vaccination.

The ability to produce abortion in susceptible animals by a single exposure to infectious material given by ingestion was demonstrated. The abortions in these cases occurred from fifty-eight to eighty-eight days after the infection.

Although the animals in Group I did not abort, the immunity was not sufficient in all cases to prevent *Bacterium abortum* from remaining viable in their bodies as shown by its demonstration in the colostrum of four of the animals.

Bacterium abortum has not been recovered from the placentae or colostrum of these animals of Group III which did become pregnant and which were subjected to vaccination only. When suppuration develops as the result of the vaccination, the organism will be found for many weeks in the discharge from such areas.

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- (In the publication of this paper the following tables have been omitted:
 I. Agglutination Tests on Blood of Experiment Cattle from August, 1921, to May, 1923.
 II. Parturition History of Ten Controls in Group II, Following Infection by Ingestion, June 26, 1922.
 III. Breeding and Calving Dates of Experiment Animals with Results of Guinea-Pig Inoculations for the Presence of Bacterium Abortum in the Placentae and Colostrum.
 It was also found necessary to omit the protocols of the bacteriological examination of the body tissues of the five vaccinated animals referred to on p. 55.
 The paper in full, with all tables and protocols of experiments, will be published as a technical bulletin by the University of California, in the near future.—EDITOR.)

DISCUSSION

DR. E. C. SCHROEDER: Mr. Chairman, Dr. Hart told us of two animals that were killed and their bodies searched afterwards for abortion bacilli, but he did not tell us what the result of the search was.

DR. HART: Five of the animals were killed; one died. In these animals which were killed, all of the lymph glands were removed, cultured and injected into guinea pigs. In some the uterus was used and in some of them the udder. They were all negative for *Bacterium abortum*.

DR. W. L. WILLIAMS: Mr. Chairman, I do not get very clearly from Dr. Hart regarding the breeding of these animals. The chart shows that the bulls were turned into the pasture, and yet from something he said it would appear that they were turned with the cattle under direct observation, so that he knew whether copulation occurred or not. It is also stated, by Dr. Hart, that the controls which he selected were taken out of Group I, after they had failed to conceive, but it is not clear that they had copulated.

It has been my observation, taking a large group of animals, that one may foretell to a considerable degree the ratio of abortion by the number of copulations necessary for pregnancy. So, I would like to have some additional information, if Dr. Hart can give it, upon that point.

Regarding the summary presented, Dr. Hart did not give us any particular conclusion, but left the facts with us with reference to the influence of vaccination with living abortion bacilli. As I figure the results—and Dr. Hart will correct me if I have erred—in the vaccinated group, including Groups I and III, consisting of thirty animals, there were nine failures to conceive, amounting to thirty per cent of sterility, and in the fifteen other animals which were not vaccinated, there were six abortions. In other words, in the vaccinated group there was a ratio of seventy calves per one hundred cows, and in the unvaccinated group a ratio of sixty calves per one hundred cows, giving an advantage to the vaccinated group of ten per cent.

We also keep cows for milk. The forty per one hundred which aborted probably gave twenty-five per cent of the ordinary milk-flow. That is a mere guess which may be right or wrong, which would add about ten per cent of the normal milk-flow to the entire group. That would make seventy per cent of the ideal flow of milk in both groups; that is, it would give essentially the same yield of milk in the two groups.

We have, however, the two groups remaining, with some exceptions which have been destroyed, and we have a certain outlook regarding the future usefulness of these animals. From a reproductive standpoint the ten sterile heifers are dead. It might be that a few of those would conceive if kept over for another year; some of them may be pregnant now for that matter, but speaking generally, a heifer which has failed to breed for a year is reproductively dead. If ten sterile heifers are kept for one year, and two or three of them finally produce one living calf each, the cost of keep of the ten far outweighs the gain.

In the other group, however, where we had the forty per cent of abortion, the maximum prospect for conception is one hundred per cent. In the group which was vaccinated, the maximum prospect for breeding is seventy per cent. So that the maximum estimate to be placed upon the value of the animals, as they remain at the time that the experiment is reported, according to my computation, is thirty per cent in favor of the non-vaccinated animals; that is, we have a prospect of one hundred per cent pregnancy in the one and a prospect of seventy per cent of conception in the vaccinated animals.

That seems to me to indicate, unless some additional explanation is made, that the use of living cultures is a very great detriment and a danger to the cattle industry. This large volume of sterility is in harmony with all other reports regarding this subject which we can find. That is true in the Bland report, where the sterility and abortion, taken together, amount to about the same sum in both vaccinated and non-vaccinated. (Applause).

DR. E. A. WATSON: Mr. Chairman, if in a few words Dr. Hart could say something on the nature of the vaccine itself, it would be of interest. I gather that very massive doses were employed, owing to the local reactions of abscesses

and I am interested to know the dosage, the virulence of the culture, its age, and any method of standardization that was attempted.

DR. W. W. WILLIAMS: Mr. Chairman, I would like to ask a question of Dr. Hart as to what methods he employed in ascertaining whether the bulls used were healthy in other respects than that of infection by *Bacillus abortus*? Very commonly, in some breeding sections of the country, we find as many as fifty per cent of the bulls in a herd that are diseased and are unable to reproduce normally, which affects to a great degree the abortion rate.

Generally it may be stated that the fertility of the bull is not indicated by his agglutination test; that is, it has not been shown, as far as yet determined, that this has any great significance on his fertility and upon the health and vitality of the offspring which may come from him.

Another point which I think has never been clearly shown is whether there is an actual immunity produced in any case to *Bacillus abortus*. We hear of immunity being produced to abortion. Abortion is merely an act like sneezing and coughing and various other acts which cannot be very readily immunized against. Again, it is stated that in a number of these cases *Bacillus abortus* was obtained from the udder or other places in the immunized animal. That does not constitute true immunity; it is simply a relative immunity. I would like to ask the question whether there is a true immunity to bacterial invasion by *Bacillus abortus* produced and whether there is any evidence to this effect, any records which may have been given?

DR. EICHHORN: I would like to ask the question of Dr. Hart, out of the nine sterile animals subjected to breeding, how many became pregnant, if any? Furthermore, as to the control group, out of the six aborting animals (I think the group contained eight) one aborted before the infection could be established and one from another cause. Out of these eight animals how many were successfully bred subsequently?

CHAIRMAN GOSS: If that is all, we will now listen to Dr. Hart's replies to these discussions.

DR. HART: In regard to Dr. Williams' question regarding the breeding dates of these animals, in certain groups of them we have the definite breeding dates; in others only the period between two dates when the bulls were in constant association with them. All of the animals that have definite breeding dates in the majority of cases conceived with one service. One of the animals which did not get pregnant was bred the last time on June 19, five days previous to the examination on June 24. We did not know, therefore, whether she was pregnant or not, but she had to go into this group because we wanted to proceed with the infection experiments.

The other animals were bred between February 7 and April 10 and we did not keep definite breeding dates. Therefore, we do not have the number of times those ten animals were bred to get with calf. The same occurred with four animals in Group III, and we do not know how many animals in that group of six were bred without getting a calf. We are now keeping them under observation and know how many of them have been bred and whether they got with calf.

To answer Dr. Eichhorn's question definitely, two of the animals in Group III are definitely with calf at this time and maybe some more of them, but there was a period of a year which elapsed without them getting with calf, which was of course at least a delayed impregnation period. Also three of the animals in Group II, which aborted, are now with calf.

Dr. Watson asked how these organisms were grown to make the vaccine. They were grown on glycerin-glucose broth and on glycerin-glucose agar, the growth on the agar being washed off to reinforce the bouillon culture, and we injected the animals with 20 cc of a 4,000,000,000 suspension, the 4,000,000,000 suspension being ascertained by using a comparator standard with Pear's precipitated fullers' earth, after the method recommended by the Hygienic Laboratory, in the production of antimeningococcic serum. We injected this entire dose at one point. Therefore, we had a very severe reaction at that one point. We disinfected the area with a 3% solution of cresol, as would be done in routine field practice, and then injected the 20-cc dose at one point. We got out of that the fact that as long as there is discharge from an abscess at the point of injection, there will be a discharge of *Bacterium abortum* from

the area, and they will be there in large quantities. There is no question, however, but what vaccination can be carried out with a much lower incidence of abscess formation than we had in our animals.

Dr. Williams asks what we did to be sure the bulls were free from other infections besides *Bacterium abortum*. These bulls were taken from a certified dairy, near San Francisco, which has been under our observation for many years, and these animals have been quite free from genital troubles. About five years ago there were a number of cases of retained after-birth, and last year the only difficulty was the presence of scours in the calves. The bulls were about fifteen months old at time of purchase, and we do not think they had been in service prior to the time we obtained them. Our work being largely directed toward the study of the effect of *Bacterium abortum* and not having any definitely established technique to ascertain the presence of other infections, we felt we had done all we could in getting bulls with this kind of a history and negative blood tests for *Bacterium abortum*.

In complete answer to Dr. Eichhorn's question, I would like to say that I am not one of those persons who considers himself one hundred per cent perfect in the diagnosis of pregnancy, and the diagnosis of pregnancy of the animals mentioned above in Groups II and III was made on August 11, and I believe those pregnant, which I have indicated; namely, Nos. 416-A, 429-A, 2181 in Group II, and 2313 and 2315, in Group III.

DR. EICHORN: The statement of Dr. Hart regarding the present pregnancy of the animals in Groups II and III entirely upsets the deductions made by Dr. Williams.

MULE PRODUCTION SHOWS INCREASE

The ability of mules to endure hardships and perform service under adverse conditions has established them firmly in American agriculture, which is shown by the fact that mules for farm work increased from 4,209,769 in 1910 to 5,432,391 in 1920, or nearly 30 per cent, according to Farmers' Bulletin 1341, Mule Production, just issued by the United States Department of Agriculture.

"There is a wrong and a right way to lead a mule," says the author of the bulletin. "A man who looks at a mule and lugs at his head will never make progress. The mule will not be pulled. He will usually follow quietly, however, if a man will walk away in the direction he desires to go. Neither can you "bully" mules into going through tight places; they are somewhat like sheep, and if the leader can be induced to go the rest will follow."

After telling how to handle mules the bulletin discusses the selection, care and feeding of jacks and mares for the production of mules; the weaning, care and education of mule colts; and gives a detailed description of the market classes—draft mules, farm mules, sugar mules, cotton mules and mining mules—with illustrations of choice, good and medium or common animals of each type. It may be obtained upon application to the United States Department of Agriculture at Washington, D. C., as long as the supply lasts.

THE TREATMENT OF CONVULSIONS IN DOGS¹

By E. L. QUITMAN, Chicago, Ill.

It is not my intention to enter upon a scientific discussion of this very broad and troublesome subject, but to treat, in an intensely practical manner, the therapeutic handling of the very common conditions spoken of as convulsions or fits.

Colics were the most common and troublesome conditions met with in horses and this causes me to study them and their therapeutics exceedingly closely and to arrive at a "standardized treatment," which is now well known and has given universal satisfaction.

For the same reasons mentioned in connection with colics of horses, I have given careful study to the subject of canine convulsions and have conducted exhaustive therapeutic experiments, extending over a number of years, and I believe that I am now able to give to the veterinary profession a "standardized treatment" that will give more pleasing results than any heretofore used.

CONVULSIONS CLASSIFIED

From a practical standpoint it might be said that convulsions are of two kinds, *i. e.*, those that arise from more or less removable causes and those that arise from causes which are not readily removed, such as infections and dietetic deficiencies.

The word "convulsions" is used here to cover every type and degree of fits from that type in which there is only a mild chattering or snapping of the jaws, accompanied by perhaps some frothy saliva, to the violent, tetaniform or epileptiform convulsions, or the furious type in which the animal barks furiously, runs wildly, jumps through a window and in other ways gives evidence of a furious delirium, rather than convulsions. In fact, it is a misnomer to include the latter condition, in some instances, in the category of convulsions, but in so much as convulsions so frequently accompany the delirium I shall, for practical and therapeutic purposes, include delirium.

THERAPEUTICS

In the instance of convulsions due to infections, such as those that complicate distemper, typhus, cerebro-spinal meningitis,

¹Read before the fortieth annual meeting of the Illinois State Veterinary Medical Association and fourth annual University Veterinary Conference, Champaign-Urbana, Ill., July 10-11-12, 1923.

etc., and dietetic deficiency conditions, quick removal of the cause is out of the question. Control being our only hope, such drugs as the bromides, chloral hydrate, gelsemium, *Passiflora incarnata*, lobelin sulphate, etc., have not only failed us miserably, in the control of convulsions due to infections and deficiency conditions, but are, on account of their depressant action, detrimental to the possible recovery of the patient.

Such convulsions, as well as epileptic convulsions, can best be controlled by luminal or by luminal-sodium, of which I will treat more fully later on in this article. On account of convenience I prefer luminal-sodium.

For the other type, in which the cause is more or less quickly removable, are these cases due to worms, overloaded stomach, indigestible material in the stomach or intestines, obstipation, obstruction of the bowels, etc., and those due to fright or excitement which may be included in this category, as fright or excitement will rarely, if ever, cause convulsions unless accompanied by an overloaded or at least a full stomach, or possibly obstipation.

In this latter class the sheet-anchor drugs are apomorphin hydrochlorid, arecolin hydrobromid and luminal-sodium, augmented in convulsions due to infections and dietetic deficiencies by barbital (veronal) and horse nettle berries.

STANDARDIZED TREATMENT

In fact, these five drugs, properly handled, constitute my "standardized treatment" for convulsions. Surely not a formidable list of drugs. However, they constitute a most formidable battery against convulsions.

In some cases apomorphin and luminal-sodium constitute the battery of defense, in some it is arecolin and luminal-sodium, while in others, the infections and dietetic deficiency cases, it may be luminal-sodium or the fluid extract of horse nettle berries or possibly barbital, if necessary.

In those cases of convulsions which are preceded by a frightened appearance, loud yelping and barking and a tendency to run, there is some material in the stomach, perhaps a piece of cloth, waste or some such material, wedged in the pyloric orifice, which must be removed to cut short the attack and to prevent a continuance of the convulsions to a fatal issue.

For the removal of such obstructive and perhaps toxic material apomorphin hydrochlorid is used in doses of one-tenth to one-

fifth of a grain, dissolved in a little water and administered hypodermatically. For pups under two months old one-thirtieth to one-twentieth of a grain is usually sufficient. In some rare cases there seems to be paralysis of the stomach, especially if the condition has prevailed for ten to twelve hours; then the apomorphin may have to be repeated, at fifteen-minute intervals, for two to four doses. Should this repetition of doses fail, then the stomach should be washed out, for even though the apomorphin may fail to produce emesis (in one case in a thousand) it causes such sedation that gastric lavage can be performed.

The veterinarian usually gets these cases promptly, on account of the fear that they inculcate in the minds of the laity that the dog has "gone mad." In many such cases, after the stomach has been emptied, the convulsions cease without additional treatment, though there are sufficient exceptions to justify the veterinarian in always following up the emetic after its action has ceased (one-half to one hour), with the proper doses of luminal-sodium, to check any further convulsions and to quiet the patient, which should be put in a dark, quiet place to rest and sleep.

CONVULSIONS CAUSED BY PARASITES

In convulsions due to worms, obstipation or toxic material in the intestines, all of which may cause convulsions varying from the mildest to the most violent type, but minus the delirium of the stomach causes, arecolin hydrobromid followed later by a dose of luminal-sodium is the battery of defense chosen.

The foregoing types of convulsions rarely require more than one to three doses of luminal, and frequently the convulsions subside upon relieving the stomach or bowels of their offending material, especially when apomorphin is used, as it has anti-spasmodic and sedative actions in addition to its emetic action.

In those cases due to *not readily removable causes*, such as infections and dietetic deficiency conditions, the battery of defense is luminal, to control the violent convulsions, and fluidextract of horse nettle berries, to subdue the convulsions concomitant with spinal meningitis. Either drug, administered two or three times daily, usually controls the convulsions, although they may be given more frequently if necessary.

Barbital (veronal) is not often required when luminal is used. It may be used in very severe cases, should the luminal fail to cause sleep, or it may be used in the absence of luminal, although

luminal is the preferred drug in the treatment of convulsions on account of its greater curative properties. Barbitol is more hypnotic than luminal, while luminal is more anticonvulsant than barbitol.

PHARMACOLOGY OF THE DRUGS USED

Apomorphin hydrochlorid is the salt of an artificial alkaloid of opium, very soluble in water. It is obtainable in 1/20- to 1/10-grain tablets. The dose, hypodermatically for dogs, is 1/20 to 1/5 grain. In strychnin convulsions large doses are required and may have to be repeated.

Principal physiological actions: In full doses it is emetic, antispasmodic and sedative. In small doses (1/40 grain) it is a liquefying expectorant and sedative to the respiratory mucous membranes. As an emetic it acts in from three to ten minutes. In cats it acts as a very-quick-acting emeto-cathartic.

ARECOLIN HYDROBROMID

Arecolin is the active principle of areca nut and although it does not seem to have the vermifugal effect of the powdered nut, it is remarkably effective as a quick-acting vermifuge and cathartic, acting especially well for the removal of tapeworms. It is very soluble in water. The dose for dogs by the mouth is — to $\frac{1}{4}$ grain for puppies under two months of age; for older dogs $\frac{1}{4}$ to one grain and even $1\frac{1}{2}$ grains, according to age and size or weight. It acts in from ten to sixty minutes, usually in less than thirty minutes, if a proper dose has been given. It is remarkably safe for the dog.

LUMINAL AND LUMINAL-SODIUM

Actions—Luminal is one of the most powerful of the modern synthetic hypnotics. In large doses, up to seven to ten grains, it produces deep sleep in severe mental disorders, except in the presence of marked excitement or pain. It must be employed cautiously, in small doses. It has also proved to be a powerful sedative, especially in epileptic conditions. In properly selected doses it does not depress the heart or respiration, and acts satisfactorily in small doses in various convulsive conditions.

It does not irritate the kidneys, when used in the customary range of doses. It exerts a pronounced and antispasmodic action in epileptic and other convulsive conditions. In the form of luminal-sodium it may be given rectally and subcutaneously, as well as orally. For this reason I use the sodium salt in preference to luminal which can be given only orally.

Description—Luminal is a white, odorless and somewhat bitter powder, almost insoluble in cold water, but dissolving readily in organic solvents and dilute alkalies.

Luminal-sodium is a white, crystalline, hygroscopic powder, very easily soluble in water. Solutions, however, decompose and should not be kept over one week. Luminal and its sodium salt are obtainable in powder and in tablets, luminal in 1½- and 5-grain tablets and luminal-sodium in 1½-grain tablets.

Dosage—Ordinary range of dosage is from one and one-half grains to ten grains. Of the luminal-sodium I usually give from one and one-half to three grains, to a dog of average size, grading the dose according to the severity of the convulsions.

In epilepsy or prolonged convulsions I give one and one-half grain two or three times daily. The salt is somewhat slower in action than luminal itself. In dogs effects are obtained in from thirty to sixty minutes, when given orally, somewhat more quickly when administered subcutaneously. The same doses may be used subcutaneously or rectally, as when given orally.

BARBITAL

This drug was formerly known as veronal, when it was patented and made in Germany, but since being made in the United States it is known as barbital. It occurs as a white powder and in 5-grain tablets.

Dosage—Five to fifteen grains; ten grains, however, seldom has to be exceeded in the dog to produce sleep.

Actions—It is somewhat anodyne, antispasmodic and markedly hypnotic, causing deep, restful sleep. In large doses it is a cardiac and respiratory depressant.

HORSE NETTLE BERRIES

Solanum carolinense—Lin.

This drug is a spinal sedative and I find it most useful to control and maintain in control the convulsions of spinal meningitis.

Dosage—Dog: One-half to one dram of the fluidextract, two to three times daily, combined with some flavoring agent.

In conclusion I wish to mention that inasmuch as this paper has to do only with *convulsions* in dogs, I am precluded from taking up the treatment of the basic cause of convulsions of the not readily removable type, as that would necessitate my considering the treatment of a number of diseases mentioned in the fore part of this article, which would be far too lengthy for the purpose of this paper.

POTENCY TESTS FOR BLACKLEG FILTRATE AND AGGRESSIN BASED ON THE AGGRESSIVE ACTION OF THESE PRODUCTS*

By JOSEPH P. SCOTT, *Manhattan, Kan.*

Potency tests for blackleg products based on the immunization of laboratory animals have not proven satisfactory. Consequently, tests that measure potency in degrees of aggressiveness or, "aggressive units," have been devised at the Veterinary Laboratories of the Kansas Agricultural Experiment Station. The first of these tests, the neutralization test, was worked out in 1918 by Goss and Scott¹. The other, the "washed culture" test, was developed during the past winter and is here presented.

In performing immunity tests on laboratory animals, two assumptions must be proven. First, that the animals under consideration, in this case guinea pigs, are susceptible to the disease and show some degree of uniformity in this susceptibility; and second, that a measurable amount of immunity can be produced in these animals.

It is well known that guinea pigs are susceptible to blackleg. However, the variability of the susceptibility is great. This variation is perhaps most easily seen in examining the records of potency and safety tests for powder blackleg vaccine. The potency test is performed by giving four guinea pigs doses of 40, 25, 15 and 7.5 mg. of powder vaccine. The safety test is run on nine guinea pigs, three getting 3 mg., three 5 mg., and three 7.5 mg. of powder vaccine. These tests often shown that a vaccine tested by means of the potency test has a minimum killing strength (m.l.d.) of 40 mg. and when tested for safety, a minimum killing strength of 3 or 5 mg., showing a variation in strength of eight to ten times the smallest killing dose. The same results within slightly reduced limits have been found when using pure cultures of *Clostridium chauwei*, or in using powdered muscle virus. The size of the guinea pig has been found to have little effect on the degree of variation of susceptibility.

GUINEA PIG IMMUNITY TEST

The degree of immunity that it is possible to produce is very low. (See Table I).

*Contribution from the Veterinary Division, Agricultural Experiment Station, Kansas State Agricultural College.

TABLE I.—IMMUNIZATION OF GUINEA PIGS BY MEANS OF BLACKLEG PRODUCTS

Guinea Pig No.	Immunization			Test Injection			Results			
	Weight	Product	Dose	Date	Product	Dose	Date	MLD	Amt.	Kind
504	300	anti-blackleg serum 46	.1	3/22	culture virus	7 mld	3/23	1	2 mg	powder virus 1641
505	250		.1			7		1	2	
506	200		.1			7		1	2	
507	200		.1			7		1	2	
508	250		.1			7		1	2	
509	200		.1			7		1	2	
<hr/>										
Preliminary Observations										
516	175	powder vaccine 1970	40 mg.	3/27	1X	1X			5 mg	powder virus 1641
517	200		15		1X	1X			5	
518	300		25		1X	1X		1½	5	
519	300		40		1X	2X		1½	5	
520	400	1580	25		1X	2X		1½	5	
521	200		15		1X	2X		1½	5	
<hr/>										
439	300	powder virus 1970	6 mg.	3/17	OK	OK			2 mg	powder virus 1641
440	300		4		OK	OK			2	
441	300		10		OK	OK			2	
442	300	1641	2	3/29	OK	OK			2	
533	275		2	4/7	OK	D			2	
534	300		2		OK	OK			2	
<hr/>										
263	300	aggressin 208	2 cc	1/19						
264	400		3						.3	
265	400		4						.3	
266	400		5						.3	
268	400		3						.3	
269	400		4						.3	
270	300		5						.3	
299	275	Filtrate 1052	2						.3	
300	400		4						.3	
301	350		4						.3	
302	400		5						.3	
303	400		2						.3	
304	400		3						.3	
305	300		4						.3	
306	350		5						.3	

X indicates the amount of swelling: 1X, small; 2X, moderate; 3X, large; D, dead.

In Table I a comparison of three methods of producing immunity in guinea pigs is made. First, by the use of anti-blackleg serum and virus; second, by the use of powder vaccine or virus; and third, by the use of filtrate and aggressin. The only case where a measurable amount of immunity was produced was one in which powder vaccine was used. The vaccination reaction shows that the guinea pigs that lived after the test injection of virus, had developed marked lesions on vaccination. This degree of reaction would have produced death in more susceptible guinea pigs, which shows that these guinea pigs had a natural resistance to blackleg. The fact that it is very difficult to produce an immunity in guinea pigs by the injection of blackleg products, and the undoubted fact (Table IV) that it is possible to give calves a very high degree of active immunity by the use of blackleg filtrate or aggressin, led to the development of a test which, by the use of large doses of virulent mixtures of virus and filtrate, would eliminate, to a considerable degree, the variation in susceptibility of guinea pigs.

NEUTRALIZATION TEST

The "neutralization" test is based on two facts; first, that the products of growth of the causative agent of blackleg, *Clostridium chauvei*, whether produced in the animal body (aggressin) or in culture media (filtrate), are absolutely non-toxic; second, that small amounts of aggressin or filtrate will activate sublethal doses of blackleg virus.

TABLE II—TEST SHOWING THE NON-TOXIC NATURE OF AGGRESSIN AND FILTRATE²

Guinea Pig		Product		Results			
Number	Weight	Aggressin		1st	2nd	3rd	4th
		Dose	Date				
857	500	5 cc	10-20-19	O.K.	O.K.	O.K.	O.K.
858	400	7	10-20-19	O.K.	O.K.	O.K.	O.K.
307	400	15	1-14-20	O.K.	O.K.	O.K.	O.K.
308	450	23	1-14-20	2X	1X	O.K.	O.K.
Filtrate							
285	300	5 cc	1-13-20	O.K.	O.K.	O.K.	O.K.
286	400	7	1-13-20	O.K.	O.K.	O.K.	O.K.
305	500	15	1-14-20	O.K.	O.K.	O.K.	O.K.
306	500	25	1-14-20	O.K.	O.K.	O.K.	O.K.

Table II shows that blackleg aggressin and filtrate are non-toxic. Large doses of these products produce no lesions in guinea pigs, other than a swelling due to the large amount of foreign material to be absorbed.

The second basic fact for the neutralization test, that sublethal doses of blackleg virus are activated by a certain amount of filtrate or aggressin, is shown by immunizing a guinea pig with

anti-blackleg serum, and if, a few hours later, it be given a small dose of virus, together with blackleg aggressin or filtrate, it will die, showing typical lesions of blackleg. Guinea pigs receiving the same dose of serum, followed by the dose of virus, this time without the addition of aggressin or filtrate, show no reaction. This shows that the active substance in these products is a true aggressin.

By means of the neutralization test (Table III) it is possible to determine the aggressive strength, in terms of aggressive units, of the aggressin or filtrate tested. An aggressive unit is that amount of aggressive substance that will neutralize one anti-blackleg unit of anti-blackleg serum. Before the neutralization test can be used it is necessary to determine the m.l.d. of the virus and the potency of the immune serum to be used.

The m.l.d. of the virus is determined by giving six or more guinea pigs graduated doses of virus, 0.1 to 0.5 cc. The dose selected as the m.l.d. is determined from the guinea pig dying within 48 hours, which received the smallest dose. The m.l.d. should kill all guinea pigs tested, and all guinea pigs receiving higher doses should also be killed.

The potency of the anti-serum is determined on three to six guinea pigs. These are given 0.1 to 0.01 cc of serum depending on its presumed strength, and 15 hours later graduated doses of virus. (1 to 4 m.l.d.). The guinea pig receiving the largest dose of virus, that does not die, determines the potency of the serum.

TABLE III—THE NEUTRALIZATION TEST

Guinea Pig			Product		Culture virus No. 28A			Results		
Number	Weight		Kind	Dose*	Dose	MLD	Date	1st	2nd	3rd
663	350	Immune serum No. 46 Dose—.15 cc Date—2/1/23	Filtrate 1296	5 cc	.5 cc	2	2/2/23	1X	OK	OK
664	400			4	.5	2		2X	1X	OK
665	350			3	.5	2		2X	1X	OK
666	250			2	.5	2		OK	OK	OK
667	200		Filtrate 197	5	.5	2		1X	1X	OK
668	300			4	.5	2		2X	D	
669	400			3	.5	2		1X	1X	OK
670	250			2	.5	2		1X	OK	OK
671	300		Aggressin 210	5	.5	2		3X	3X	D
672	200			4	.5	2		1X	1X	1X
673	250			3	.5	2		3X	D	
674	300			2	.5	2		3X	3X	D
683	250				1.5	5		OK	OK	OK
684	200				4.2	16		½X	OK	OK

*2/2/23

Table III shows the results of the neutralization test. On the evening of February 1, 1923, twelve test guinea pigs and two check guinea pigs were injected with .15 cc of anti-blackleg serum No. 46. This serum had been previously titrated and

found to have a protective strength of 100 units per cc. Therefore, .15 cc of serum contained 15 anti-blackleg units. The check guinea pig (No. 684) showed protection against 16 m.l.d. of the virus used.

Fifteen hours later, February 2, 1923, varying doses of filtrate and aggressin mixed with two m.l.d. of culture virus were injected and the guinea pigs observed daily for the three following days, at which time the test was read. In analyzing the test we noticed that of the four guinea pigs injected with filtrate 1296, two guinea pigs (664 and 665) receiving 3.0 and 4.0 cc of filtrate showed marked lesions. Guinea pig 665, receiving the smallest dose of filtrate (3.0 cc) determined the strength of the serial. Guinea pig 665 was immunized against 15 m.l.d. of virus. It received 2 m.l.d. of virus and 3 cc of filtrate 1296. Therefore, it is evident that the 3 cc of filtrate neutralized the action of 13 anti-blackleg units of serum, allowing marked lesions to develop. So, 3 cc of filtrate 1296 has a strength of 13 aggressive units and one 5-cc dose of filtrate 1296 has an aggressive strength of 21.65 aggressive units. One dose of filtrate 197, in the same way, has a strength of 16.25 units and aggressin 210 a strength of 32.5 units.

A comparison of the guinea-pig-immunity test, the neutralization test and the production of immunity in calves was made with the following results.

Table IV shows the immunization of Hereford calves, eight to twelve months of age.

TABLE IV—IMMUNIZATION OF CALVES BY MEANS OF BLACKLEG FILTRATE

Filtrate				Virus			Results		
Calf	No.	Dose	Date	No.	Dose	Date	1st	2nd	3rd
1	1	5 cc	10/23/17	1	10 cc	11/17/17	OK	OK	OK
2		5			10		OK	OK	OK
3		5			10		Lame	Lame	OK
4	2	5	11/15/17	Frey	5	1/3/18	Lame	OK	OK
5		5			5		Lame	OK	OK
6		5			5		Lame	OK	OK
1020				1	10	11/12/17	Lame	Lame	Dead
1021					10		Lame	Lame	Dead
1022					10		Lame	Lame	Dead

Table IV shows that filtrates 1 and 2 had a very high degree of immunizing power. Both of these filtrates, when tested on guinea pigs by the guinea-pig-immunity test, gave the following results: Eight guinea pigs were used on each serial, two guinea pigs receiving 2 cc; two, 3 cc; two 4 cc; and two 5 cc; and ten days later 1 m.l.d. of virus. Of the eight guinea pigs given filtrate 1, four died; of the eight guinea pigs given filtrate 2, five

died, showing that there was no correlation between the calf and the guinea pig immunization powers of filtrate.

Filtrate 1 was tested by the neutralization test and a strength of 13.5 aggressive units found.*

WASHED CULTURE OR WASHED VIRUS TEST

The second aggressive action test is known as the "washed culture" test. This test depends on the fact that virulent cultures of *Clostridium chauvei* are rendered avirulent by repeated washing in salt solution. Leclainche and Vallee³ showed that heated spore cultures of *Cl. chauvei* were avirulent and non-antigenic, in that these heated spores did not produce an immunity in cattle.

The avirulence of virulent blackleg cultures, washed by centrifugalizing three times in salt solution and making up to original volume, is shown in Table V.

TABLE V—AVIRULENCE OF WASHED VIRUS

Guinea Pig		Product			Results				
No.	Weight	No.	Dose	Date	1st	2nd	3rd	4th	5th
441	600	28A	15 cc	12/9/22	1X	2X	2X	OK	OK
442	600		7		OK	OK	OK	OK	OK
223	325		3	12/30/19	OK	OK	OK	OK	OK
224	425		3		OK	OK	OK	OK	OK
255	300	2	6	1/5/20	OK	OK	OK	OK	OK
256	300		5		OK	OK	OK	OK	OK
257	300		2.5		OK	OK	OK	OK	OK
330	500		10		OK	OK	OK	OK	OK
830	700		15	3/16/23	1X	1X	OK	OK	OK

If small doses of washed virus and small doses of filtrate be mixed and injected into a guinea pig, typical blackleg is produced. This shows that blackleg aggressin and filtrate contain a

TABLE VI—DETERMINATION OF POTENTIAL M.L.D.

Guinea Pig		Virus			Filtrate						
No.	Wt.	No.	Dose	Date	No.	Dose	Date	1st	2nd	3rd	4th
370	600	28A	.3 cc	12/9/22				2X	1X	1X	
371	250		.3					3X	D		
372	600		.3					1X	1X	1X	
373	250		.2					3X	3X	3X	
816	250	28B	.3	3/12/23				OK	OK	OK	
817	500		.4					OK	OK	OK	
818	300		.6					½X	3X	3X	
Washed Virus											
489	350	28A	.5	12/20/22	1195	.3 cc	12/20/22	2X	3X	D	
490	350		.5			.4		OK	3X	D	
491	350		.5			.6		D			
754	600		.6			.7		OK	OK	3X	3X
755	250	28B	.8	3/14/23	298	.7	3/14/23	3X	D		
756	200		1.0			.7		3X	D		

true aggressin. The washed culture test depends on measuring the smallest dose of filtrate that will activate a unit of washed

*loc. cit.

culture corresponding to one m.l.d. of virus. This unit, the potential m.l.d., is calculated by comparing the m.l.d. of the virus, prior to washing, with the smallest dose of washed culture that becomes activated by small doses of filtrate.

The determination of the potential m.l.d. of washed virus is shown in Table VI, which shows that the m.l.d. of virus 28A was 0.3 cc, the potential m.l.d. of washed virus 28A 0.5 cc, the m.l.d. of virus 28B 0.6 cc — and the corresponding potential m.l.d. of the washed virus 28B 0.8 cc.

TABLE VII—WASHED CULTURE TEST

Guinea Pig		Washed Virus		Product	Dose	Date	Results		
No.	Weight	No.	Dose				1st	2nd	3rd
614	350	28A	.4 cc	Filtrate	.2 cc	1/18/23	3X	OK	OK
615	350		.4	1296	.4		2X	3X	3X
616	350		.4		.6		2X	3X	3X
617	300		.4	Filtrate	.2		3X	3X	3X
618	300		.4	197	.4		3X	D	
619	300		.4		.6		D		
620	350		.4	Aggressin	.2		3X	3X	OK
621	350		.4	210	.4		3X	D	
622	350		.4		.6		D		
819	300	28B	.7	Filtrate	.2	3/16/23	OK	1X	OK
820	250		.7	197	.3		OK	OK	OK
821	300		.7		.4		1X	3X	D
822	250		.7	Filtrate	.2		OK	OK	OK
823	300		.7	298	.3		OK	3X	D
824	300		.7		.4		OK	1X	D
825	250		.7	Aggressin	.2		2X	D	
826	300		.7	210	.3		1X	3X	D
827	225		.7		.4		1X	D	

In the tests shown in Table VII the potential m.l.d. of washed virus 28A was taken to be 0.4 cc and that of 28B as 0.7 cc. Virus 28A was obtained from brain-liver culture of strain 28, 28B from a second lot of brain-liver culture, strain 28. It is seen that the virulence of these two batches of virus varies greatly. The virulent substance is apparently in the washed-virus part of the virus, not in the soluble products removed. This would indicate that the degree of virulence of the organisms does not affect the amount of aggressive substance produced. At present this problem is being considered from the standpoint of measuring the aggressive action of filtrate from virulent and avirulent strains. The results obtained indicate that filtrates from avirulent strains have as high an aggressive titre as those obtained from virulent strains.

A washed-culture test on three serials of filtrate and one serial of aggressin is shown in Table VII, where it is seen that 0.4 cc of filtrate 1296 activated one potential m.l.d. of washed virus

28A. From this it is seen that one 5cc-dose of filtrate 1296 and aggressin 210 has a strength of 25 units, as the pigs receiving 0.2 cc showed marked swellings of a grade indicating that death was almost reached. These results are compared with those obtained for the same serials obtained by the neutralization test in Table IV.

	Serial	Washed-Culture Test		Neutralization Test
		28A	28B	
Filtrate	1296	12.5		21.65
Filtrate	197	25	12.5	16.5
Aggressin	210	25	25	32.5

Cattle also show this aggressive reaction quite clearly. Several cases of vaccination with spore vaccine, followed in a few weeks by blackleg filtrate, have resulted in death from blackleg within three days after the administration of blackleg filtrate.⁴

CONCLUSIONS

1. Guinea pigs show a very marked variation in their susceptibility to blackleg inoculations.
2. Guinea pigs are not readily immunized against blackleg inoculations.
3. It is possible to measure quantitatively the amount of aggressive substance found in blackleg aggressin and filtrate by means of the neutralization and washed-culture tests.
4. A filtrate that showed high powers of immunization in cattle was found to have an aggressive strength of 13.5 units.
5. Considerable correlation in the results between the two aggressive-action tests was found.

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MAJOR SURGERY

- Willis: "Where have you been?"
- Gillis: "In the hospital, getting censored."
- Willis: "Censored?"
- Gillis: "Yes, I had several important parts cut out."—*Judge*

THE TREATMENT OF RETAINED PLACENTA OF COWS¹

By JOHN P. TURNER, *Washington, D. C.*

This subject has been selected on account of its importance to cattle husbandry and also for the reason that all of us know something concerning its proper treatment and yet all of us have much more to learn. Ten years ago, it was easy to talk about this disease and apparently we were well satisfied with our knowledge of the subject and its practical application.

But, thanks to the researches of Prof. W. L. Williams, of this country, Prof. Hesse, of Switzerland, and Dr. Albrechtsen, of Denmark, we have had much light on this subject and our hopes are that since the practice of bovine gynecology has made such rapid strides for betterment in recent years, we may yet know much more than we do at present.

Personally, I feel that each year gives us more information, and that within a few years we may have a better understanding of this disease and, what is far more important, that the breeder and dairy farmer will sooner or later arise to a sense of realization of the seriousness of this disease, of which retention of the placenta is the only visible symptom.

Almost daily, we get the usual call to "clean a cow" and the average farmer and breeder thinks it is just a mere mechanical job, which is either too filthy for him to undertake or he feels a little uncertain as to just how far he should go in self-treatment, or how much traction should be exerted. Frequently a neighbor, with great self-assurance would do the work for him or some herdsman, who thought he knew all about it, would boldly "walk where angels fear to tread."

For many years one of the largest breeders in this state has permitted his herdsman to remove all placentae, the owner boasting of the latter's skill. Suffice it to say, there is a great deal of sterility in this herd and there always will be, if the present practice continues.

This disease is seldom considered at a meeting of veterinarians, that both the moral and practical issue are not argued. The owner, who is usually very much unenlightened as to the gravity of this condition, wants the semi-putrid, offensive placenta removed, thinking that with its removal the disease is cured.

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The veterinarian is not blameless in this situation. He may not be as enlightened on the subject as he should be. He may be in a rut and ceases to use his cerebrum, depending too much on his strong right arm. He may also have a competitor in practice, who is one of those voluble, self-assuring fellows, who does not bother much with the code of ethics.

Now, what is the too frequent procedure. He examines the patient and finds the placenta quite adherent. Meanwhile the idea rolls in his mind that this client is good for only one call with this particular disease and that if he does not go through the mechanical work of removing the placenta, the farmer will be dissatisfied and will send for his competitor, who always removes them. This is not a pipe-dream, but an everyday occurrence. In my opinion, it requires a very conscientious veterinarian to do this work properly. Seldom do I leave a case, where the placenta is manually removed, that I am absolutely contented and self-satisfied with my work, and this feeling is growing on us with each succeeding year.

Let us consider the high-points of this disease. A cow calving normally usually passes the placenta within twelve to twenty-four hours. If its retention persists beyond this period, there is infection present in that uterus, which has developed either before or during pregnancy, mostly before, and does not manifest its symptoms until the calf has been expelled, either normally or abnormally, as in abortion. When a normal cow delivers her calf, the umbilical cord parts, the chorion begins to die and it should be sequestered by the endometrium, pass out of the cervix and be expelled.

Placental adhesion always precedes parturition and is not caused by the latter act. The infection causing this disease may be a streptococcus, or a colon type is frequently present as a secondary invader. The maternal crypts becomes inflamed and owing to the intimate relations of the chorionic tufts, the latter are completely involved. They become greatly enlarged and swollen and are incarcerated into the similarly enlarged and swollen placental crypts and we have retention of the placenta as a result.

The placentitis always begins at the cervical end of the uterus and proceeds towards the horns. If the cow aborts early, the placenta frequently passes with the fetus, on account of the lack of development of the chorionic tufts and placental crypts, and the adhesion does not occur, as the infection has progressed

too rapidly for the proper incarceration of these undeveloped tissues.

The nearer to full term the abortion occurs, the greater the tendency to retention of the placenta, due to the aforestated reasons. However, in some cases of late abortion, the placenta may pass with the fetus owing to the placentitis having advanced very rapidly and completed its course by the bursting open of the incarcerated tissues. If the development of the foetus has progressed faster than the infection in the uterus, we have a live calf and a decidedly adherent placenta, often more serious than had abortion occurred.

If the calf is strong and lusty, the usual course is that the placentitis is not severe and involves only a few cotyledons, near the cervical end of the uterus, while those near the ovarian end are probably healthy. This is the usual type of retained placenta which separates easily and leaves very little trace of endometritis, and in which the cow is again fertile. However, should the calf be weak at birth or develop dysentery in a few days, the probability is that the placentitis is severe and will endure for many days. The virulence of the infection has much to do with the character and length of the time of adherence.

In mild cases physiological functions may re-establish themselves and the separation occurs rapidly, before a firm incarceration has occurred. Again, the infection may be so severe as to cause necrosis of all or part of the cotyledons, with sloughing within two or three days after calving and thus ends the retention. Occasionally retained placentae are not visible and may be either attached or unattached to the cotyledons, depending on the course of the placentitis, or we may even have sloughing off of the cotyledons and the whole mass may be more or less incarcerated by a semi-paretic uterus. A constricted cervix may also be at fault, holding back this mass, which, if not surgically removed, is sure to undergo putrefaction and establish pyometra.

Very frequently we are called to treat cows that are ailing following parturition and are informed that she has passed the placenta. We always examine such a case, both by the rectum and vagina, just as much as a matter of routine as you would remove a shoe, in any case of lameness of the horse, before making a diagnosis. Very frequently the placenta in part or as a whole may be adherent, the owner being mistaken by what he has seen passed by the cow.

Retention of the placenta is a symptom of one of the most destructive diseases of cows, especially full-blood animals. I allude to metritis. Not only do we have quite a high mortality rate, as occurs at times, where a perfect storm of fatal metritis attacks a herd, but the economic loss, as well, from loss of physical condition and loss of production, where metritis appears with its predominant symptom—retained placenta. It also causes more incurable sterility than any other disease, on account of the destruction of the endometrium.

The oily-tongued charlatan, be he either graduate or non-graduate, who extols this or that cure for retained placenta, is a dangerous menace to animal husbandry. He should be visited by one of these metritis "storms," early in his career, on a horse- or cow-breeding farm, and when he finally awakens he will realize that his education along these lines is just beginning, if he still possesses any gray matter along his ears.

Opinions of the best veterinary gynecologists differ in many respects concerning the removal of placentae. Many of the best do not manually remove a placenta. One of the leading specialists in the treatment of sterility does not pay any attention to the removal of placentae, simply keeping them as clean as possible by external antiseptic application and vaginal irrigation with normal salt solution.

His argument is that all surgical interference with the interior of the uterus carries more or less infection with it and that few men have arms of sufficient length to enable them to remove placental adhesions, especially in the horns of the uterus and if he tears the chorionic tufts from the maternal crypts he opens a fresh wound which may become a new centre of bacterial infection.

Another eminent specialist treats these cases, depending on whether they are scrub cows or full-bloods. He manually removes the placenta of a scrub cow and pumps a large amount of weak disinfectant solution into the uterus, using normal salt solution as the last solution to be pumped in, and allows the latter to remain in the uterus. But, with high-grades and full-bloods, he has learned that this is a dangerous practice and that the placenta must not be removed until it comes away with very little "unbuttoning" and with very little traction exerted.

Undoubtedly there is much less resistance in the uterus of a highly bred animal, kept under modern, high-pressure dairy conditions. From a long experience, we know that the hardy,

scrub cow will withstand much mismanagement in such diseases as we are speaking of, and many of them will remain fertile. But do not try crude work with full-bloods. Many of us earn our living through the mismanagement of this disease and, personally, I do not relish their treatment, as such a very large percentage are incurably sterile from destroyed mucous membrane. A very prominent breeder of cows in this state will not allow his veterinarian to remove a retained placenta, owing to the large number of sterile cows resulting from his treatment. He states that he occasionally loses a cow from metritis, but those that recover are usually breeders. This is an illustration of the financial loss to the veterinarian, who either has not properly educated this breeder or, on the contrary, he may mismanage his cases.

I believe there is a middle ground to stand upon, not going to extremes either way. I have frequently seen cows ruined and destroyed by the too early removal of the placenta and, on the contrary, the same condition has been observed, where chronic, incurable pyometra has developed where no attention whatever has been paid to treatment.

Certainly the removal of a placenta is to be desired, if it can be removed without injury to the uterus. This is desirable if we are to treat the endometritis which has caused the adherence. The removal of a placenta is imperative if the cotyledons have all sloughed off and it is lying as a putrefying mass in a parietic uterus, but very much care and judgment is necessary, even in this latter type of case, if the cervix is contracted. Careful dilation of the cervix and gentle traction on the mass will often give happy results.

Put on your rubber operating frock and hood, using a sleeveless sweater underneath in winter and a large oversweater to cover the body and arms until ready to enter the cow. Provide your own basins (enamel), white soap and towels. Wash the tail, vulva, udder and buttocks, after you have emptied the rectum, and pass the tail to the side, securing it to a ring and cord passed around the girth. After you have washed the cow and thoroughly soaped your arms and hands, pass the gum tubing into the vagina and irrigate with a gallon of normal salt solution. If the placenta is foul, a weak solution of therapogen is used for irrigation.

Potassium permanganate was discarded several years ago, owing to the caustic effect on the vaginal mucous membrane of

any undissolved crystals. It is doubtful if washing the uterus before removal of the placenta is of any value, unless part of the chorion has broken and passed out, otherwise we would simply be washing the bag from which the calf had been removed and our liquid would not come into contact with the uterine mucous membrane. We wash the vagina to remove mechanically threads and semi-necrotic parts of the chorion.

Then begin your examination, starting at the cervical end of the uterus. If but a few loosely attached chorionic tufts are attached to the cotyledons, then we loosen them with gentle traction and a squeezing of the cotyledon between the thumb and fore-finger. A few minutes work should suffice to remove any placenta which should be removed.

Whenever I hear of a practitioner requiring an hour to remove a placenta, I feel sure there has been mismanagement and there will surely be a bad case of endometritis as a sequela. Most of the easily removed placentae would come away of their own accord. If the placenta is in proper condition to remove, and the uterus is contracting strongly, we wash the uterus with normal salt solution, using a funnel and gum hose and syphon out all of it. If the uterus is paretic, the less liquid placed in it the better.

Should the chorion be tightly attached to the maternal crypts, the owner is so advised and instructed as to what we are doing and why. In such a case we discontinue any further attempts at removal and introduce from one to two pints of mineral oil, to which has been added some bismuth-formic-iodide powder, into the horn of the uterus. This tends to allay inflammation, prevents putrefaction and generally has both healing and soothing qualities.

The dragging end of the placenta is cut off within three or four inches of the vagina, to prevent both calf and udder infection. Should little or no membrane be protruding, we fold four or five yards of gauze into a bag and introduce it into the uterus, allowing the end to protrude into the vagina close up to the vulva. This prevents closure of the cervix. If the cervix is contracted, we try to introduce some oiled gauze through it, with a sound, and renew it from time to time.

In your examination of a retained placenta beware of meddling too much with a uterus which is flaccid and fails to contract. The problem before you is not the mere removal of the foetal membrane at a given time, but is whether or not the removal is

going to do more injury to the uterus than the danger caused by its retention.

Drugs given internally have no practical value. Epsom salts is given as a purgative and eliminative, and the resultant straining may be of some value, but expulsion in these cases would come naturally, if given more time.

As to injecting normal salt solution into the chorionic vessels, I have tried it and find it of little value, as the placental capillaries are always blocked by thrombi and would not permit the passage of the solution, and furthermore, if it could be done, it would only make the capillaries swell and further increase their tightening the maternal crypts.

To keep the owner interested and busy, have him keep the external parts very clean and, with a funnel and gum tube, direct him how to give a daily vaginal wash of one gallon of normal salt solution. This keeps the membranes clean and fairly odorless, causes some straining and will not permit much of the solution to enter the uterus.

The hand and arm of the herdsman is not to enter the vagina or uterus under any conditions. Too much leeway has been allowed and too much credence given assumed knowledge of this subject, the seriousness of which is not surpassed by any other condition we are called upon to treat. Personally, I can see no more reason for allowing a herdsman to enter his arm into a bovine subject than a human subject.

We do not make haste in examining patients with retained placenta unless some symptoms of distress are noted, usually allowing the owner to give vaginal washings for two or three days. We frequently make two or three visits to a case before the placenta can be removed. This, of course, is where the animals have marked value or where the owner has confidence in our advice. With scrub cows the washings are maintained for three or four days and a second visit made. The seriousness of the case from the standpoint of sterility is always laid before the owner and we must, from a business standpoint, be somewhat advised by his stand.

Expediency may be resorted to, somewhat, in treating scrub cows with no great value, either as producers or breeders, but no such policy should be pursued with full-blood animals.

The placenta removed, we are then ready to treat the endometritis which has caused it. This we do by thoroughly dressing the cow, tying the tail sidewise, drawing the cervix to vulva and

introducing a 1 to 2% solution of Lugol's solution into the uterus with a uterine catheter, the amount depending on the state of the uterus which is determined by a prior rectal examination. If this shows a strongly contracting uterus one pint will be sufficient; if not contracting, but not paretic, we introduce two pints, depending all the time on whether the uterus contracts to our washing. If the Lugol's solution is forced out of the catheter in a fairly strong manner, say an inch, we have introduced enough. If no contraction exists, the treatment is stopped and syphoning undertaken, accompanied by gentle rectal massage. If the cervix shows much inflammation, such symptoms being shown as a marked swelling, somewhat purplish in color, pure Lugol's solution is used to swab the os and cervix, protecting the floor of the vagina with cotton.

This treatment is given every week or ten days and usually two to three treatments suffice. When there is no discharge from the uterus or cervix, as evidenced by failure to mat the hair of the tail, and the cervix looks contracted and pink, we have the case well underway. Should pyometra develop, as evidenced by a pus-like discharge, aggravated by lying down and evidenced by rectal pressure on the uterus, we always catheterize the uterus with a horse catheter and endeavor to empty it before introducing any solution, as the introduction of more fluid to an already overburdened uterus may cause rupture and death.

If the treatment of endometritis is undertaken in these cases, instead of the mere symptom of retained placenta, the owner will usually be repaid by having a fertile cow, and the veterinarian by not only an increased fee, due to the extra visits, but also by an increased appreciation of his services by the breeders, who will usually pass the good work along.

This more or less Utopian plan of treatment in a section which has not yet been properly blazed can be established only by the education of the veterinarian to a better practice of bovine gynecology and by a better education of the farmer to the seriousness of retained placenta, which can be done by plain talks, devoid of technical language, given to them, especially at farmers' and grange meetings.

If the idea has been brought out clearly that retained placenta is not a disease, but a symptom of a very serious disease, the proper treatment of which is of paramount importance to cattle breeding, then we will feel compensated, like the Boy Scout, that he has done a kindly deed today.

STERILITY IN CATTLE¹

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A dairy cow, to function properly, besides producing a good quantity of milk, should give birth to a normal calf each twelve to fourteen months. The largest pure-bred herd in Pennsylvania, consisting of approximately 250 cows, produced an average of one calf per cow each year, for a period of ten years. This means that most every cow in the herd has produced a calf every year. The inability in some cows, to conceive in time to cope with the general average of the herd, has been made up for by a number of cows which have given birth to twins and a single calf within a year. One cow has a record of five calves in two years—two sets of twins and a single calf. This herd is well stabled, well cared for and well fed, but, it is not fed to produce high milk records. Sterile cows, or diseased cows, are not retained in the herd.

Production efficiency is not determined altogether on the basis of the amount of milk a cow is capable of producing within a given length of time. The principal aim of the dairyman is to have a large production of milk. The value of a dairy cow is determined by the amount of milk she can produce. The dairyman realizes that to keep milk production at the maximum, his cows must freshen about once a year. The pure-bred cattle breeder looks forward to getting as many offspring as possible and to having as much value in the offspring as it is possible to get. The value of the individual is not determined altogether by her appearance and type, nor quantity and quality of milk produced. To have high value, the individual's ancestors or progeny must be high producers. Thus, cows are very often heavily fed on narrow rations, large amounts of concentrates and little roughage, with the aim of producing high records. A rather high percentage of this class of cows became affected with conditions which cause sterility.

DEFINITION

Sterility is the absence of generative function and may affect either male or female animals. The absence of function may

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occur as a result of the lack of development of some part or parts or all of the genital system; it may occur as a cessation of function once established; or it occasionally occurs in young animals with a normally developed genital system which has never functioned in the production of young.

CLASSIFICATION

Sterility may be classified as:

1. Absolute or permanent sterility. Reproduction impossible.
2. Temporary sterility. Reproduction occurs irregularly.

Animals do not reproduce for limited lengths of time.

The occurrence of abortion interferes with the production of normal young and from this standpoint is a temporary sterility.

IMPORTANCE

The question of sterility in cattle is of very grave importance to the agricultural industry. It interferes with the propagation of certain blood-lines of certain outstanding families in the various breeds. It concerns the pure-bred breeder in that it limits the number of valuable offspring and hinders the selection of the best individuals as breeding stock. It concerns the dairyman from the standpoint of the amount of milk produced. Its interference with the amount of milk produced is of grave concern to the pure-bred breeder also, more from the standpoint that it often interferes with high records, than from the standpoint of milk value.

CAUSES OF STERILITY

The causes of sterility may be divided into:

1. Predisposing, or indirect.
2. Actual, or direct.

Cattle abortion disease, caused by *Bacterium abortus* (Bang), is usually considered an indirect cause of sterility. It is probably indirectly responsible for more than fifty per cent of the cases of sterility in cattle, and possibly is directly responsible for a small percentage. The abortion organism is capable of causing inflammatory processes accompanied by the formation of pus pockets. A limited number of the cases of sterility in the bull are undoubtedly caused directly by *Bacterium abortus* (Bang). In the uterus of the female, *Bacterium abortus* (Bang) probably acts only as a predisposing cause of sterility, by paving the way for other organisms to become active after the fetus has been aborted or delivered at normal time. In abortion-infected herds which

have come under my observation, there has occurred a higher percentage of sterility than in herds free from infection with *Bacterium abortus* (Bang). There is a certain percentage of sterility in any large herd, but, if the percentages of abortion and sterility are represented graphically, the sterility graph usually follows the general order of the abortion graph.

In one large herd consisting of approximately 200 female animals, *Bacterium pyogenes* was the principal secondary invading organism. A large number of cases of sterility developed following abortions or apparently normal parturitions. Several cases were studied bacteriologically and invariably the *Bacterium pyogenes* was isolated. A few cows developed a generalized condition and died. Others developed generalized abscesses over the body, in the udder, etc., from which *Bacterium pyogenes* was isolated. Quite a number developed abscesses in the uterine wall, in the submucosa or under the serosa. Perimetritis, adhesions and permanent sterility were not uncommon. A number of the aborted fetuses were examined and, in each case, *Bacterium abortus* (Bang) was isolated in pure culture from the contents of the fourth stomach, which eliminates other organisms as a cause of the abortions.

Bacterium pyogenes and streptococci probably cause more serious damage than any other secondary infective organism of the female genital tract. In most all long-standing cases of septic metritis or septic infection of other parts of the genital tract of the cow, such cases do not respond to treatment, the *Bacterium pyogenes* or one of the group of streptococci can be isolated. Other organisms which have been found on a bacteriological study of septic endometritis are staphylococci which often are the cause of a moderately severe inflammation; also micrococci and rarely colon bacilli. A gas-producing organism which causes the formation of a rather large quantity of pus, having the appearance of curdled milk, is occasionally encountered in septic endometritis. The emanated gas has a very strong putrefactive odor.

The kind of feed which a cow receives is probably second only to abortion as an indirect cause of sterility. Cows fed on high protein diets for the purpose of causing heavy milk production, and those fed for fat production, in preparation for show circuit, are quite prone to become sterile and frequently become permanently sterile. Some relation between the ovary and the udder which we do not understand may be partly accountable

for the condition. The feed may not have so much to do with it. While a large amount of feed goes into the cow there is a heavy drain on those cows which are milked four or five times a day. It is possible that the question of the cause of this class of sterility may be solved by the addition of certain minerals to the diet; the addition of proper vitamins; or by the study of substitutes for diets now being used. These are questions for the agriculturist to solve. The solution may be in the field of endocrinology. An existing relationship between the ovary and udder in this class of cases is indicated by a change of the amount of milk produced, if the ovaries, which usually are cystic, are treated until cysts no longer form.

It is known to breeders that if these cases are treated, the amount of milk is considerably reduced. The excessive stimulation of the udder tissue by the large amount of concentrated feed fed the animal, or the stimulation of the udder tissue by frequent milkings, apparently has a very noticeable effect on the ovary. Repeated treatment of the cystic ovary in these highly fed cows very often has a marked effect on the udder which is indicated by a reduction in the amount of milk. It is known that the first manifestation of sexual maturity has a marked effect on the udder. Virgin heifers occasionally develop cystic ovaries and become true nymphomaniacs and often show a well developed udder. Nymphomaniac cows which have been dry can occasionally be put back into the milking line and produce enough milk to pay for their feed. One case which was dry became a nymphomaniac and after a time showed udder development, was placed in the milking line and is producing approximately thirty pounds of milk per day. There is a possibility in the highly-fed, record-producing cow that, instead of the trouble being in the feed, it is in the excessively stimulated udder, stimulated by feed or frequent milking, which has the effect of throwing the endocrine system out of balance. Through this process of unbalancing, there is some effect upon the ovaries which causes them to become cystic.

Other causes of sterility are the various forms of uterine inflammation—endometritis, myometritis and perimetritis. Inflammations in the vagina, cervix, fallopian tube or its fimbriated extremity; inflammation of the ovary or the retention of a corpus luteum, cystic condition of the ovary, fallopian tube or cervix.

Any condition causing inflammation of any part of the genital tract may act as a cause of sterility. Inflammation is the reac-

tion of living tissue against the action of an irritant. The irritant may be parts of a retained placenta, which is dead tissue, pus-producing organisms, pus, calcified material, mummified fetus, strong irritating substances introduced into the uterus; specific inflammations such as tuberculosis of the fallopian tubes, ovaries, uterus, etc.

Granular vaginitis is not usually considered to occupy an important position as a cause for sterility. In certain cases it does appear that granular vaginitis is the direct cause in heifers. Occasionally a number of heifers in a herd fail to conceive after repeated services. Heifers with a history of this kind, upon examination, usually are rather severely affected with granular vaginitis, no other abnormal conditions being found, and after repeated vaginal douches with a mild antiseptic, usually conceive.

Bacteria present in the uterus or cervical canal, by the formation of toxic products, may have a direct action on the spermatozoa, or may indirectly act as a cause of sterility by so altering the secretions that the spermatozoa are killed.

Other causes are stenosis of any portion of the genital canal which may be brought about by abnormal conditions in surrounding tissues or organs or by swelling of the mucosa in the narrower portions of this canal, as in the cervix, the smaller portions of the cornua or in the fallopian tubes; tumors within the genital canal or in the tissues surrounding it; misplacements and torsions; lacerations of the cervix; peritonitis causing adhesions of the ovaries, uterus, fallopian tubes or fimbriated extremity; close-breeding and in-breeding; endocrine system unbalanced.

Various other abnormal conditions which are less frequently observed may be the cause of sterility, such as, improper development or lack of development of the genital system or some portion of it. This is a cause of absolute or permanent sterility and is most likely to be observed in young animals which have failed to conceive.

Still other causes are old age, with atrophy of the ovaries or other portions of the genital tract; general constitutional diseases. Improper treatment in attempts to remedy a temporary sterility may be the cause of a permanent sterility. Puncture of the endometrium with a catheter is likely to cause abscess-formation in the uterine wall, peritonitis, adhesions, etc. The abnormal uterus is often lacking in tone, friable, and its walls easily punctured. In some cases of sterility, it is difficult or apparently impossible, to locate the cause clinically.

Sterility in the bull has been observed as caused by mechanical obstruction, such as tumors in the prepuce. A case of tuberculosis of the prepuce caused sterility by mechanical obstruction. Sterility has been caused by infection in the testicles and epididymis with *Bacterium tuberculosis*, *B. bipolaris*, and *Bact. abortus* (Bang.) Lack of development of the genital organs is a cause. A few cases in the bull have been observed in which the organs were apparently normally developed, but the spermatozoa only in head part, and had no tail portions, and therefore, were non-motile. We have a record of one case of this kind. A young bull had well covered forty-five cows and none of them had become pregnant. Microscopic examination of the semen revealed tailless spermatozoa. Other causes in the bull are phimosis, paraphimosis, paralysis of penis, rupture of the cavernous tissues of penis, priapism, fracture of the erected penis, proctitis and endocrine system unbalanced.

DIAGNOSIS

The diagnosis of sterility is usually established before the veterinarian is called to determine the cause. The veterinarian who claims to be expert in the diagnosis of conditions causative of sterility, besides having a fair knowledge of the normal genital tract, abnormalities and diseased conditions which may affect it, must be an expert in the diagnosis of the various stages of pregnancy. Cows which the history indicates have never been bred, upon examination, are frequently found to be pregnant. A mistake could be made by attempting to treat these cases without having previously examined them. Other cows, while pregnant, may show signs of estrum at regular or irregular intervals after conception has taken place. The history in these cases would indicate sterility while examination shows the animal to be pregnant. It is necessary to be able to establish a diagnosis of "pregnant" or "not pregnant" in cows which have been treated for sterility, have been bred, and have gone over several estral periods. Examination shows that a number of this class are not pregnant. Then we should look to the ovaries for the presence of a retained corpus luteum. Other cows which have been bred and conceived go beyond their normal parturition date without showing any signs of parturition. When such a cow has gone ten, eleven, twelve or possibly thirteen months, the attention of a veterinarian is called to the case. In these cases a diagnosis of mummified fetus is usually established.

The history and general appearance of the cow immediately establishes the diagnosis of nymphomania and indicates to the diagnostician that he is dealing with cystic ovaries and possibly cervicitis, salpingitis, etc.

Granular vaginitis and other diseases of the vagina are readily diagnosed by examination of that portion of the genital tract. Adhesions, tumors, abscesses, diseases of the ovaries, tubes, and, to a certain extent, diseases of the uterus, are diagnosed by rectal examination. Septic conditions of the uterus often require catheterization of that organ by the Albrechtsen method, before the diagnosis is definitely established. In all such cases, laboratory facilities should be taken advantage of when necessary to complete the diagnosis.

PATHOLOGY

Post-mortems of sterile animals show lesions corresponding to the list of abnormalities mentioned under causes. The uterus and uterine mucosa are subject to the same forms of inflammation as other similar tissues, and range from a simple catarrhal to a suppurative or even the chronic proliferative form; besides specific inflammation, such as tuberculosis. The uterine wall consists of three layers. The endometrium, including the glandular layer, is the most exposed and most subject to inflammation which is known as endometritis. Inflammation of the muscular layer is designated as myometritis and of the perimetrium as perimetritis. It is impossible to differentiate these forms clinically. Endometritis may be catarrhal, suppurative, ulcerative, hemorrhagic or all combined. Chronic forms of endometritis are inclined to become catarrhal.

In chronic endometritis there may be present:

1. Glandular hypertrophy. Uterine glands increased in size and abnormal in shape.
2. Glandular hyperplasia. Uterine glands increased in number at the expense of interglandular tissue.
3. Interstitial changes. Increase in connective tissue of the endometrium at the expense of the glandular elements. The connective tissue of the endometrium is changed from the normal embryonic type to mature fibres, which widely separate the glands.
4. Cystic endometritis. The outlet of some of the glands is closed and as a result, retention cysts are formed.
5. Polypoid endometritis. Interstitial changes in conjunc-

tion with glandular hypertrophy gives rise to the formation of mucous polyps.

In most all forms of uterine inflammation, the wall of the uterus becomes thickened. In the interstitial form due to the formation of fibrinous tissue which contracts, the wall is thinner than normal.

The ovaries show cystic degeneration, interstitial ovaritis with the formation of fibrous tissue, and may show a retained corpus luteum which is sometimes deeply seated and surrounded by fibrous tissue.

The abnormalities of the fallopian tubes may be acute or chronic catarrhal inflammations; hydrosalpinx and pyosalpinx.

Inflammations of the cervix are similar in nature to those found in the uterus proper. The external os frequently is enlarged in the form of a cauliflower-like growth. Septic conditions of the cervix, in exceptional cases, cause it to become dilated so that the cervical canal is more or less elliptical in shape. As much as three pints of pus, the formation of which was caused by a streptococcus, has been withdrawn from the cervical canal in one operation. Clinically, this case was diagnosed as pyometra. Bacteriological study showed the pus to contain a pure culture of a streptococcus.

PREVENTION AND TREATMENT

A large percentage of the conditions given as causes of sterility are secondary to some infective organism. In fact, most of the direct causes of sterility are secondary to some other primary cause. Therefore, in the treatment of sterility, it is often the secondary condition we must deal with while in prevention, which is more effective than treatment, we must deal with the primary cause.

Those who are engaged in an advisory capacity, should aim to give advice of a nature that will inform breeders of the best methods of keeping the reproductive functions normal.

The prevention of abortion disease will undoubtedly be the indirect means of preventing a large percentage of cases of sterility. It is my opinion that those who advocate the use of living-culture, bovine abortion vaccine, advocate additional troubles in the herds in which they are used. My experience up to the present time with the Pennsylvania Bureau of Animal Industry, in the use of living-culture bovine abortion vaccine, does not make me inclined to encourage its use. Experience

teaches that conditions are not bad enough in any herd to encourage or possibly to justify its use.

The encouragement of a study of methods of feeding cows under test for high records, with the object of correcting the incorrect methods, may become the means of preventing a number of cases of sterility. This is possible of accomplishment in the class of cows in which the sterility is apparently due to improper rations.

One who advises the removal from the herd of all cows showing a septic condition in any part of the body is giving advice of a nature which may be the means of preventing a number of cases of sterility later.

In the treatment of sterility the tendency is to overtreat. It is better not to treat at all or to treat too little than to treat too much. The genital organs individually or collectively are very delicate. In the female they are more or less a sympathetic group of organs or parts. It seems that if one part becomes severely affected, the other parts also become affected. By repeated irritation in treating too frequently, there is a tendency to set up chronic inflammation. In treating the abnormalities one must use judgment and treat whatever condition is presented. In septic endometritis the Albrechtsen uterine douche is indicated. It seems that better results are obtained by treating only every three or four weeks than when it is used more frequently. In cystic ovary cases, the cysts are broken occasionally by massage of the affected ovaries. Beneficial results are obtained in cows which fail to show signs of estrum for a long time by the administration of ovarian extract. In enlargement of the external cervix, it sometimes becomes necessary to remove excessive parts. Cows having unilateral salpingitis and a cystic ovary are sometimes benefited by the removal of the affected ovary and fallopian tube. Cases of perimetritis with adhesions are more likely to recover if turned on pasture for a period of five or six months and are not treated at all.

There is much to be learned in the field of endocrinology. It is my opinion that a number of the problems confronting us at this time with reference to sterility in cows will be more easily solved when the physiological action of extracts of the ductless glands have been thoroughly studied. This field of treatment should not be overdone to its destruction. Facts should be definitely established with reference to the physiological action or benefits which may be derived from their use before products

of ductless glands, either singly or in combination, are put on the market. Otherwise, they should be used only experimentally. This is a big, undeveloped field.

Most valuable advancement will have been made when the discovery has been made of something that will destroy *Bacterium abortus* (Bang) infection in the carrier cow.

A FINE IDEA

The accompanying photograph shows a view of the booth maintained at the recent Champaign County (Ill.) Fair. Dr. A. H. Davidson, formerly in practice at Hume, Illinois, and now county veterinarian, engaged in tuberculosis eradication work, was in charge of the booth. Dr. Davidson reports that over 250 of the leading breeders and farmers of the county



Booth of Champaign County, (Illinois) Veterinarians

visited this booth for the purpose of obtaining information relative to animal diseases. The expense in connection with the booth was borne by the nineteen veterinarians located in Champaign County, and cost them approximately two dollars each. The majority of them feel that the booth was a good thing. Dr. Davidson is entitled to considerable credit for the manner in which he had the booth arranged.

Success doesn't happen. It comes to those who are willing to work for it, study for it, and meet the obstacles that stand in the way of it.

AN OUTBREAK OF COW-POX, INTRODUCED BY VACCINATION, INVOLVING A HERD OF CATTLE AND A FAMILY¹

By Fred Boerner, Jr., Philadelphia, Pa.

On October 29, 1922, I was called to investigate an outbreak of cow-pox in a herd of cattle. The disease had originally been transmitted to the cattle through virus from human vaccination



Fig. 1. Pox Lesions on the Teats.

lesions, and later transmitted from the cattle to unvaccinated human beings. The outbreak is of sufficient interest to warrant its being reported.

The owner of the farm on which the outbreak occurred did not

¹Contribution from the Bureau of Animal Industry, Pennsylvania Department of Agriculture. New Series No. 13.

reside thereon, and the care of the herd was left to an employe who lived in the immediate neighborhood. This household consisted of the employe, his family and a colored helper. No cases developed in the owner's family, which consisted of two adults and two children, all of whom had previously been vaccinated.

The employe's family numbered five, the father, the mother and three children, all boys. In what follows, these will be respectively designated as Mr. M., Mrs. M., B. M., J. M., and W. M. The following is a brief history of each case, and it has been considered best to discuss them in chronological order.

J. M., age 6 years, was vaccinated on September 16th, 1922, successfully. He did not wear any shield and according to his parents was accustomed to scratching the lesion. He had one small lesion on his finger which left a scar. This lesion developed October 1st. He did not complain of any fever during the time this lesion developed but had a slight fever one morning during the time vaccine lesion was developing. Aside from going to school he helped his father milk the cows morning and night and was doing it while his arm was still sore from the vaccination.

B. M., age 13 years, was vaccinated September 16, 1922. Like his brother he wore no shield and was noticed picking and scratching the lesion quite often. He developed one lesion on his thigh and one on his wrist about the same time as his brother, October 1st. The lesions were small and healed up readily. He also helped to attend to the cows.

About the last of September one or two of the cows developed pox lesions on the teats. This condition spread through the herd, until at the time of our visit one month later nearly every animal showed lesions on the udder or teats in various stages of development. The lesions were typical for those described for cow-pox. Cattle had been added to this herd in the spring and in June and July, but they were said to have been free of the disease, at the time of their arrival and remained so until the time of the outbreak.

Mr. M., age 33 years, never vaccinated. He had one lesion on the face and a few small lesions on the arm and one on each thumb. He said the lesions first developed on his thumbs, one in particular, which he believes became infected through a knife wound. The date of its first appearance was the latter part of September or the first of October. One of Mr. M.'s duties was to take care of a herd of cattle numbering about forty, many of

which he milked morning and night. The disease did not manifest itself very severely in his case, as the lesions were small, and healed readily and were not in my mind as typical as exhibited in some of the other members of the family.

W. M., age 19 months, never vaccinated. On October 8th skin trouble developed on his face which the mother thought was eczema and which she treated herself. This condition



Fig. 2. Pox Lesions on the Face of Mrs. M.

cleared up in a couple of days. A week later, October 15th, pox lesions developed on his arms, five or six on the one arm and two or three on the other. The largest was one-fourth inch in diameter. Mrs. M. described it as appearing similar to her own case, first like a boil, which broke open, and the center ulcerated. The day of our visit these lesions seemed to be drying up with a hard scab.

Mrs. M., age 33 years, said she has never been vaccinated. It was the custom for one of the children, W. M., to sleep with his mother and she said that he usually had his arms around her neck. On Tuesday and Wednesday, October 17th and 18th, she had chills, fever and swollen glands and thought at the time she had caught cold. These symptoms subsided and six small pimples appeared on her face and on the 20th she claimed these were festered and looked somewhat like little boils which did not break until the following Wednesday and then started to ulcerate. At the time of my visit she had three lesions on the side of her face, one under the chin, one on the side of her chin and one directly in the middle of her chin. The edges were highly inflamed and greatly thickened, the center ulcerated, with crater appearance. The ones on the chin, which were the largest, appeared to be nearly an inch in diameter. The ones on the side of her face were smaller, probably a little less than an inch and were of the same appearance. The cheek was much swollen and reddened. We had a photograph taken of this case.

Helper (colored), age 24 years. Was vaccinated when he was 13 years old. Had lesion to develop on one hand, which was accompanied by some swelling of the arm. This subsided without lesions developing. The lesion on the hand was of fairly good size. Although we did not see this case, we were told that the lesion was the size of a dime. The helper also assisted in taking care of the cows.

DISCUSSION

It is difficult to determine definitely the source of infection in each of these cases, especially those which developed after the herd became infected. It can readily be seen that three of the family, as well as the colored helper, by milking the cows twice daily, contaminated their hands, and thus were in position to spread the virus directly or indirectly. It is suggested, however, that the following is the method by which the infection was spread.

The two sons, J. M. and B. M., were vaccinated September 16th, 1922. No shields were used and both were in the habit of rubbing and scratching the vaccine lesions. Their hands were thus contaminated and the infection transferred to the udders of the cows. The lesions on the body, wrist and thigh of one of the boys and on the wrist of the other, might have been caused by transference of the virus from the vaccine lesion or from the cows, through the intermedium of contaminated fingers.

The father was the next to become infected. In this case, the source was in all probability the cows, since the lesions appeared on the hands immediately after the disease appeared in the cattle.

The youngest child was accustomed to meet his father as the latter returned from work. The father usually took hold of the child's arm, and in this way doubtless infected it. It was the custom for the child to sleep with his arm around his mother's neck and this probably accounts for the lesions which shortly afterward appeared on her face.

This outbreak demonstrated clearly the dangers of transmitting cow-pox to cattle through the medium of vaccination, and that individuals recently vaccinated should not be permitted to handle dairy cows.

AN EPOCH MAKING INVENTION

The invention of a testing apparatus which accurately measures the pulling powers of horses and mules is the biggest thing that has ever happened in draft horse history. It will revolutionize breeding and permit the rapid development of a better class of draft animals. Sires will be chosen because of their worth, ascertained by actual performance.

The value of horses and mules in transporting commodities in cities and in general work on farms will be re-emphasized. With this invention it is possible to ascertain how much a team can pull without injury and to govern loads accordingly. Such an apparatus has been invented by E. V. Collins of the Agricultural Engineering Department of Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa. It is known as the horse and mule dynamometer. In tests with this machine at the Iowa State Fair, August 27, 28, 29, 1923, horses developed all the way from 8.6 horse power to 21.2 horse power and exerted a tractive pull of from 2000 to 2300 pounds.

Credit for this invention must go entirely to Mr. Collins, but the initiative came from the Horse Association of America; for it was the persistent pressure of this organization upon agricultural engineers to devise some means of measuring the pulling power of horses and mules that led to the studies which resulted as above noted.

Leaflet 97, Horse Association of America.

CLINICAL AND CASE REPORTS

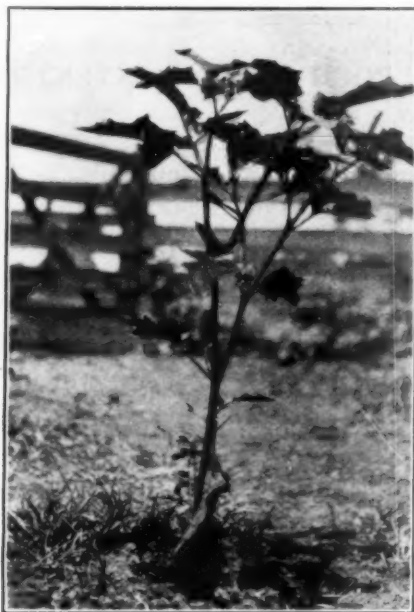
(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

JIMSON WEED POISONING

By E. D. KING, JR., Valdosta, Ga.

The plant shown in the accompanying illustration is too well known to require description. The Jimson weed, *Datura stramonium*, is common in the United States and all tropical regions.

This plant was used in the examination for the graduation of the 1916 class at the Veterinary College at Auburn, Ala., being set up on the desk used by the examiner and the students told



Jimson Weed
(*Datura stramonium*)

to "name the plant in the bucket, give the poisonous principle it contains and describe symptoms of its poisoning" or words essentially to that effect.

The reason that this plant is brought to the attention of the profession is that it killed a mule here recently, in the opinion of the writer.

A team was loose in a lot surrounding a small saw-mill, and when the driver was ready to hitch up the team to take a load of lumber to town he found one mule very sick, and called a local veterinarian who could not go, but told him that if the trouble was as the driver suspected (arsenical poisoning, from a dipping vat in an adjoining lot, close to the fence, with a small puddle overflowed in the mill lot) to give as an emergency treatment one teaspoonful of ferrous sulphate (this usually being kept on most premises.)

Later an urgent request was made that the veterinarian come out and see the mule, which was done, with result that the animal was found to be suffering from some narcotic instead of arsenical poisoning, pupils dilated, breathing labored, pulse absent, submaxillary veins greatly dilated, and mule walking backwards. It was seen that nothing could be done and immediate search was made for poisonous plants. Several Jimson weeds were found that had been bitten off and one practically eaten up.

Tracks of the mule (or the other one in the lot) were demonstrated passing by the puddle, supposedly of arsenical solution, but they passed straight by, with no interruption in the intervals of the tracks, and this animal could not have drunk out of the puddle unless he turned the front of the hoofs toward the puddle, which was not done.

In my paper published in the JOURNAL, June, 1920, Vol. LVII, New Series Vol. 10, No. 3, all possible emphasis was placed on this subject, and it is hoped that this may serve to interest, to some extent, those who have time and opportunity to study plant poisoning more.

A RADICAL OPERATION FOR NASAL SARCOMA IN A MULE

By J. E. AGHION, Sahka, Egypt

Principal Veterinary Officer, State Domains

The photograph which is here produced illustrates a case of nasal sarcoma, which for reason of its rarity, I propose to deal with in this short paper.

A grey mule, nearly five years old, of Syrian origin, property of Mostapha eff. Dawoud of Dessouk District, was sent to me for examination on June 1, 1917.

Symptoms observed were as follows: Emaciation, difficult breathing, snoring sound and dyspnea, when the animal was made to trot; muco-purulent discharge of a fetid odor from the left nostril and eye; tender swelling of the nasal bones. On closer examination the orbital fossa and turbinated bones were seen to be invaded by a tumor, which, while projecting outwards, blocked the whole of the left nostril and by reason of its enormous size was pressing on the bones of the maxillary sinuses on one side, and on the other pressing against the septum nasi, causing a projection on its other side, thus blocking totally the left nasal chamber and partly the right.

Trephining the maxillary bones was attempted, but failed to give satisfaction on account of the size of the tumor which was certainly unlike that of a nasal polypus.

The case was provisionally diagnosed as sarcoma of the turbinated bone. A radical removal of the whole tumor was suggested and carried out with the consent of the owner. The animal was prepared for operation on June 3, 1917. It was cast in a lateral position (on a heavy bedding) and in order to prevent blood entering the trachea, the head was lifted upwards by an assistant as much as possible.

The seat of operation was shaved, washed and disinfected, and a local anesthetic was given, after which a longitudinal incision, close to the middle line, was made from above downwards right over the most prominent portion of the swelling and parallel to the nasal bone, nearly 10 c. m. in length. Then two other oblique incisions, one crossing the top of the longitudinal incision, the other crossing its bottom, thus making the shape of a capital I. The skin was carefully dissected and the levator labii muscle separated. The maxillary bones, being diseased, were soft and easily cut with the knife; then they were carefully removed, exposing the nasal chamber and the tumor. The tumor (most probably sarcoma) was firmly adherent to the turbinated bone. I then had no alternative but to remove the tumor, together with the turbinated bone. The cavity of the tumor was curetted and cauterized with a solution of fuming sulphuric acid. The hemorrhage was controlled chiefly by sponging the shneiderian membrane from time to time during the operation with a solution of adrenalin chloride, the larger vessels being secured by artery forceps.

The whole cavity was then irrigated with a solution of chinosol, painted with iodine and packed with gauze. The skin was su-

tured. Daily irrigation was continued for about three weeks, during which the animal was doing well and the wound was healing satisfactorily. The animal was sent to the owner with instructions to have it sent twice a week for dressing. Now owing to the irritation of the skin, produced during the process of granulation, the animal was unluckily found loose in the stable one night thirty days after the operation, rubbing himself against the manger and producing bleeding of the nostrils and tearing of the skin immediately over the seat of operation, leaving it a bare open gap as seen in the photo.



Nasal Sarcoma

The operation I believe would have been a success if it had not been for this accident. The animal was treated for six months afterwards and the last time I had the chance to see him the wound opening was only as large as an opening of a small trephine or the size of a millieme.

It is sometimes a good thing to be the lowest spoke in the wheel. Whichever way it turns it's bound to go up.

REVIEW

DIAGNOSIS AND TREATMENT OF INTERNAL PARASITES. Maurice C. Hall, Ph. D., D. V. M., Senior Zoologist, U. S. Department of Agriculture. 92 pages and over 100 illustrations. Published by Veterinary Medicine, Chicago, Ill., 1923. Cloth, \$1.50.

This is the first of a series of books on parasitology of domestic animals to be offered by the publishers of Veterinary Medicine. According to an announcement of the publishers, the entire series will cover about three thousand pages.

The volume is divided into ten chapters. The first two chapters deal with the methods of collecting parasites from various organs and with the technic of fecal examinations. The following five chapters are devoted to a consideration of eggs and larvae of parasites from various domestic animals in the following order: dogs, cats and foxes; swine; cattle, sheep and goats; horses; poultry. Over a hundred eggs and larvae are described and illustrated with the best figures available in the literature on parasitology. The next chapter deals with spurious parasites in the feces of animals and considers among other things such forms as yeasts, microscopic seeds, spores, and other vegetable forms that superficially resemble the ova of helminths and that are frequently confusing to the inexperienced microscopist. This chapter is amply illustrated. The next two chapters deal with anthelmintics, a field in which the author of the book has come to be recognized as the foremost authority.

Following a general consideration of anthelmintic medication there follow directions for the treatment of domestic animals, for internal parasites, in the following order: Treatment for (1) horse parasites, (2) cattle parasites, (3) sheep and goat parasites, (4) swine parasites, (5) dog parasites, (6) cat parasites, (7) fox parasites, (8) poultry parasites. Dr. Hall's expert knowledge of anthelmintic medication, based on his own painstaking work and on the work of others, would make any comment on that phase of the book superfluous.

The book is singularly free from typographical errors, is profusely illustrated and is exceedingly well written. Not only veterinarians and animal husbandmen, but also zoologists and physicians will find Dr. Hall's volume a valuable aid and will await with interest the appearance of the succeeding issues of the proposed series.

B. S.

ABSTRACTS

THE DETECTION OF WORM EGGS IN FECES OF ANIMALS AND SOME EXPERIMENTS IN THE TREATMENT OF PARASITIC GASTRITIS IN CATTLE. Sheather, A. L. Jour. Comp. Path. and Thera., xxxvi (1923), p. 71.

The paper, as the title indicates, is divided into two parts. In the first a rapid method is described for examining feces of animals. Briefly the procedure may be described as follows: The feces are suspended in water, strained through wire gauze (30 meshes to inch), the strained suspension added to an equal volume of sugar solution (sugar 1 lb., water $\frac{3}{4}$ of pint) and centrifuged rapidly. Cover slips are lowered on the surface of the centrifuged liquid and gently withdrawn and placed on a slide and examined.

The second portion of the paper considers the treatment of parasitic gastritis of calves, six to nine months old, caused by *Ostertagia ostertagi*. Turpentine used in doses of two ounces and given in milk and linseed oil was not effective. Copper sulphate in doses of twelve grams, either alone or when administered with 1 to 5 grams of sodium arsenate, did not prove fatal to the worms. Tartar emetic given in a dose of sixteen grams was without effect. The writer states that, "Carbon tetrachloride was found not only useless for the treatment of the disease, but actually poisonous in a dose of 25 cc."

F. S. J.

ETIOLOGY OF SPONTANEOUS ULCER OF THE STOMACH IN DOMESTIC ANIMALS. Edward C. Rosenow. Jour. Inf. Dis., xxxii, (1923), 384.

In his studies on ulcer of the stomach in man the author was able to isolate from the ulcers and from the foci of infection a streptococcus which, when injected into experimental animals, produced ulcer of the stomach. In man the most common foci of infection were the tonsils and the teeth.

Carrying on this work in the domestic animals large numbers of calves, cows, sheep and dogs were examined. Streptococci were isolated in pure cultures, or in predominating numbers from a series of ulcers in these animals. The organisms could

also be found in the tissues where the number seemed to vary proportional to the acuteness of the condition.

Ulcers, hemorrhage, and infiltration of the stomach were produced in 86% of rabbits and dogs injected with the freshly isolated cultures from ulcers in the different species, often times showing no other lesions.

Streptococci were demonstrated in and isolated from these experimentally produced ulcers and they, in turn, when injected into animals, produced ulcer. Two of these strains so isolated and preserved in ascites-glucose-agar shake cultures, covered with oil, retained their specific localizing powers for 7½ years.

The injection of streptococci of similar morphology, but from sources other than ulcer, failed to give similar results.

The writer concludes that ulcer of the stomach in animals is, as in man, apparently often due to localized, blood-borne infection by streptococci which have a selective affinity for the mucous membrane, or other parts of the stomach.

S. S.

EXPERIMENTS ON THE DISINFECTION OF SPERM IN MAMMALS, ESPECIALLY IN RELATION TO DOURINE IN HORSES. E. Iwanow. *Parasitology* (Cambridge, Eng.), xv (1923), 2, pp. 122-127.

Sperm disinfection is of practical value in horse breeding, since dourine is very prevalent in some countries and valuable stallions may have to be retired from a stud owing to infection with this disease. Experiments in disinfection, to determine means of destroying parasites without injuring the sperm, indicated that physical methods were not promising. Radium was harmful to sperm and ultraviolet rays seemed to have inadequate penetrating powers. Some chemicals, including alcohol and atoxyl, were found unsatisfactory, but good results were obtained with salvarsan and neosalvarsan. The author recommends that prior to coitus the vagina of mares be washed with physiological salt solution containing salvarsan or neosalvarsan, 1:10,000, and that the penis of stallions be washed with an aqueous solution of the same strength after coitus. As another measure he recommends artificial insemination with the addition of the salvarsan or neosalvarsan solution to the sperm. As a prophylactic measure an ointment containing salvarsan, 1:10,000, may be used.

M. C. H.

AMERICAN VETERINARY MEDICAL ASSOCIATION

Proceedings of Sixtieth Annual Meeting, Montreal,
Canada. August 27 to 31, 1923.

MONDAY MORNING, August 27, 1923

The sixtieth annual meeting of the American Veterinary Medical Association convened at 10:45 a. m., in the Banquet Room, Mount Royal Hotel, Montreal, Canada, President W. H. Welch presiding.

PRESIDENT WELCH: I will declare the Association in order. In the absence of the Mayor, Alderman Leon Trepanier will deliver the address of welcome, acting for the Mayor of Montreal. (Applause).

ALDERMAN TREPANIER: Mr. President, Ladies and Gentlemen: It affords me a great pleasure to extend to you all a most cordial welcome to our city. I must say, Mr. President, that we have had this year quite a few conventions, but this convention of the American Veterinary Medical Association is a most unusual one for the City of Montreal. You have been kind enough to choose our city for the seat of your Diamond Jubilee meeting, and we are really proud of it, and we thank you very much.

There is an impression among, well, I would say the prominent public, that a veterinarian is a man who looks only after the maintenance of the life of domestic animals. Our common people think that a veterinarian has only a few notions of anatomy or zoology, and that he does not go very deeply into studies which regard human life. Well, gentlemen, I hope that after your deliberations some of our people who are under that false impression will have another impression, because we know that the distinguished members of this Association will go very deeply into the studies which may lead to improving and maybe prolonging human life.

We are very fortunate in having on the City Council, as one of my colleagues, a member of your Association, our good friend, Alderman Genereux, whom I would ask to stand up so that everybody will see him.

Dr Genereux arose. . . . (Applause).

Dr. Genereux belongs to a generation which is a little older than mine. That accounts perhaps for the little disagreements we have, sometimes, about financial matters, because we young-

sters of the City Council are always ready to dissipate public funds, while Dr. Genereux, who belongs to the more thrifty generation, is always there to stop those dangerous youngsters. (Laughter) But there was a moment not very long ago, ladies and gentlemen, when Dr. Genereux and I were of the very same opinion. It was when, as Chairman of the Reception Committee, he came before the Council and thought that the City of Montreal, even if it went to the very limit of its very restricted budget, to welcome the members of the American Veterinary Medical Association, even then the City of Montreal would not do enough, and I was of the very same opinion. That is the only time we agreed. (Laughter and applause)

Ladies and gentlemen, I wish to extend a special welcome to some of the distinguished members of this Association, especially to the eminent medical man from South Africa, who left that remote land to be with you here today; to the distinguished French visitor who will be here tomorrow; to the distinguished men from Cuba and Santo Domingo; and of course, to all our friends from the great American Republic.

As to the city of Montreal, I do not want to go very deeply into the history of our city, but I believe you are in a city which has a very unique character. Though we are the metropolis of the largest British colony, Montreal is the third largest French city in the world. Out of a population of nearly 800,000, the French-speaking element numbers over 600,000. The Province of Quebec is seven-eighths French-speaking origin, and I wish here to dissipate an impression which many visitors have about the French that we speak here in the Province of Quebec.

You know there are a great many of our American friends who have been a few weeks in Paris or Marseilles or Lyons and who are under the impression we do not speak what they call the Parisian French. There is nothing known as the Parisian French. There is but one French language in the world, and it is the one spoken and adopted by the French Academy in France, and the French spoken in the Province of Quebec, and all through Canada, by the two millions and a half British citizens of French origin is the French language, the one which we have inherited from the noblemen of the seventeenth century who came to our shores, developed this country and who gave us heritage, to the sixty thousand French settlers who were left here under the British domination, their language, their customs and their faith.

Ladies and gentlemen, if you cross the threshold of our French-Canadian peasants' homes in the rural districts, you may hear there the same melodious songs and lullabies, which were sung by our great grandmothers of France, in the seventeenth century, on the old land of France.

We are, in this Province of Quebec and the City of Montreal, we citizens of French descent, jealous of our rights, of our language, of our faith, of our customs, but we are also most loyal subjects of Great Britain, and we are proud to say it. Our loyalty has been submitted many a time to very severe tests and I do not want to recall but one incident in American history, for it is only history, I may say here, that when the American revolution started, when the old Chateau de Ramezay, which you will probably see tomorrow or day after tomorrow, was inhabited by American invaders, when proclamations were launched calling upon the French-Canadians to cease their allegiance to Great Britain and join the Americans, well, the French-Canadians remained loyal to Great Britain.

Still, as I said a few minutes ago, we are jealous of our rights, of our language, of our faith and the motto of the Province, which is, "*Je me souviens*;" that is, "I remember," which means that "I remember my language, I remember my faith, I remember the customs of the old France."

Ladies and gentlemen, there is one little point on which I desire to touch, too. It is that famous question of liquor in the Province of Quebec. (Laughter) I know that this Montreal has not been chosen for your convention on account of that famous temperance question, but I want to dissipate a very false impression about that famous liquor question in our Province.

The first thing is, we don't call it the "liquor" question, we call it the "temperance" question, because our new laws have practically imposed temperance in this Province. Of course, our history is founded on individual freedom and liberty and that is why we never had any idea of imposing the "Volstead" system, the system dear to Mr. Volstead and Company, right here in our Province of Quebec, (laughter) but our temperance question—we have the liquor under government control and the profits derived out of the sale of liquor in the Province of Quebec go entirely to hospitals, the foundation of homes, the improvement of education, the advancement of science, arts and medicine, and two years ago, at the end of the first fiscal year, the Pro-

vincial government put at the disposal of such noble things more than four millions of dollars. This week about ten of our young men, young medical men, musicians, artists, will leave Montreal to go to England and to France, to advance their studies, to improve their knowledge, thanks to that famous liquor of the Province of Quebec.

A very striking fact, also, ladies and gentlemen, is, since we have had our temperance law, cases of drunkenness have been reduced, from year to year, in the city of Montreal and today, though we have liquor in every government store, everywhere, in every hotel and every house, you can not see a drunken man on the streets. This is the liquor law in the Province of Quebec, and I am sure you won't abuse our good temperance law.

Montreal is a city, as I said, of an unusual character. We are the terminus of the two largest railways in Canada, the C. P. R. and the Canadian National Railways. We are also the national port of the Dominion. We have museums, libraries, educational institutions; we have two universities, English-speaking and French-speaking universities, and we have what we cherish the most, our old historical landmarks.

There is another convention opening this morning, of the American Numismatic Association, at Chateau de Ramezay. There has been published a pamphlet by the local press, in both languages, a very interesting pamphlet, which is being distributed free to the members of the American Numismatic Association, and I would invite the organizers of this convention to get a few hundred of those pamphlets and distribute them free to the visitors whom we have here today.

Now, ladies and gentlemen, I don't want to be very long. I am only replacing His Worship, the Mayor. He is a more prolific speaker than I am, and if he had been here, it would have been very much more interesting, but still I want to reiterate a most cordial welcome to you, and if Dr. Genereux finds the City of Montreal is not doing enough, let him come before us this week and tell us to spend more money than we are. (Applause)

PRESIDENT WELCH: Dr. L. A. Merillat, of Chicago, will respond. (Applause).

DR. MERILLAT: Mr. President, Ladies and Gentlemen: The address of welcome just delivered in behalf of the Mayor of Montreal imposes quite a responsibility on any one who would attempt to find words of reply. In fact, I have considerable

misgivings about my repartee, to reply to each of the features of his remarkable words of welcome.

I want to assure your Honor, however, that Montreal is not new to any of us. This is not a new city. Now, I am not thinking about what some of you are—I am thinking about the veterinary business and not the liquor business. (Laughter) I am very glad that His Honor has mentioned that particular feature about selecting Montreal as a convention city, and I want to assure him that not a single man here has come for that purpose, but I do not think that that spoiled the attendance any. (Laughter)

I am thinking of Montreal from an entirely different standpoint. All veterinarians can not help but have a great deal of reverence for Montreal. Montreal is the cradle of the veterinary profession in the Western Hemisphere. Expressing it in French, "Montreal est le berceau de nos travail."

It is here that the first, orderly, highly-rated veterinary school was established on this continent, and it is here in Canada that education on the Western Hemisphere received its impetus.

You may be interested in knowing that veterinary education is purely French in origin. Not so many years ago, in fact, just exactly 160 years ago, Claude Bourgelat, a musketeer of Lyons, under King Louis XV, established the first veterinary school in history. The first attempt to do any public instruction, to carry out a curriculum in veterinary science, to establish a profession, in other words, began on that day and date, and that institution your Honor, is existing today and Professor Porcher, a good friend whom I chanced to meet in Paris during my sojourn there, is a professor of that institution.

That is one reason why Montreal is important to veterinary science. More than that, the school established by Bourgelat yielded another distinguished man, not much known in veterinary history, Charles Vial. Few men know Charles Vial. He was a graduate of Lyons, and a demonstrator of anatomy under Bourgelat, but he was a little bit sore about the way his colleagues were treating him in regard to promotions, and he migrated to London and started the Royal College of England. You see, it was a Frenchman, after all, who started the thing going in our language.

In 1790, the Veterinary College of London was established, and this in a few years became the Royal College. The history of

veterinary science from that time on is household information to all of you. These schools, the Royal College of London, of Glasgow, of Dublin, the Royal (Dick) School, begat the men who carried veterinary science to this continent, with one exception. Oxford yielded Liautard.

The four pioneers are Professor Andrew Smith, who established the Veterinary School of Toronto; Professor Duncan McEachran, who might have been here this morning, but I understand is indisposed; Professor James Law, who established veterinary education in New York, and then our great Liautard, who established the first orderly education in the United States.

These are the four pioneers in veterinary education in this country, but it was Montreal, it was Toronto, that led and consequently, we feel very proud to have selected this place to celebrate this Diamond Jubilee, and I am sure that it is these facts that dominated a great deal in making this selection.

With these few words, I deliver to you, to your custody, the welfare and comfort of these delicate looking gentlemen during the next two or three days. Thank you very kindly. (Applause)

. . . . President Welch delivered his address. Published in this issue, p. 8. . . . (Applause).

DR. N. S. MAYO: I move that the President's Address be referred to the Executive Committee for their consideration.

. . . . The motion was seconded by Dr. Kiernan and carried. . . .

DR. EICHHORN: In the address of welcome, mention was made of the fact that we have with us on this occasion representatives of foreign continents. Among those from South Africa is one who has probably contributed more towards the advancement of veterinary science, especially in the control of and research in tropical diseases, than any one else in the world. The veterinary profession is indeed very proud that we have this celebrity with us, and I suggest, Mr. President, that Sir Arnold Theiler, one of the best known men of the veterinary profession in the world, should be asked to deliberate with us at our sessions, as we are sure that every one will benefit from his opinions, and I further suggest that he be escorted to the platform, that every one of you may have the pleasure of meeting him. (Applause).

PRESIDENT WELCH: I will ask Dr. Watson and Dr. Eichhorn to escort Sir Arnold Theiler to the front.

. . . The audience arose and applauded as Sir Arnold was escorted to the platform.

DR. THEILER: Mr. President, Ladies and Gentlemen: It affords me a great pleasure to be here among you Canadians and Americans. I have been looking forward for this trip for many a year. I was prevented from doing so on the last occasion through ill health. I took the first opportunity to come over to these great countries of yours and meet my colleagues in this part of the world. My work, as Professor Eichhorn has pointed out, has mostly been in tropical diseases, of Africa in general. It is quite true that we have made a considerable success, but certainly it was due to a great extent to the great work which was done in America, and also in that disease which the President has mentioned, Texas fever, which has opened the door for further investigation in the tropical diseases, of Africa in general. It is through American science that success was possible in the tropics.

Ladies and Gentlemen, I thank you most heartily for the welcome which you have given to me. I was told that Americans are hospitable; I was told that I would be welcome, but your reception has surpassed anything that I had a right to expect. Mr. President, Ladies and Gentlemen, I thank you from the bottom of my heart for the kindness and the good reception you have given me. (Applause)

PRESIDENT WELCH: Gentlemen, the matter of the presentation and adoption of the minutes of the previous meeting is now in order.

SECRETARY HOSKINS: Mr. President and Members: I have here the numbers of our official JOURNAL which contain the minutes of the meeting held in St. Louis last year, and I would present them to the Association as the official record of that meeting.

DR. MAYO: Mr. President, I move that the report of the Secretary be accepted.

. . . The motion was seconded by Dr. Kiernan and carried.

. . . The meeting adjourned at 12:30 p. m., on motion of Dr. Mayo, duly seconded.

ADJOURNMENT

(To be continued)

OTHER MEETINGS

MASSACHUSETTS VETERINARY MEDICAL ASSOCIATION

The regular monthly meeting of the Massachusetts Veterinary Medical Association was held at the New American House, in Boston, on June 27, 1923. The meeting was called to order at 5:45 by President Thayer. The following members were present: Drs. Pierce, White, Paquin, Bricault, Thayer, Playdon, Howard, Gilbert, Boutell and Carroll.

The records of the previous meeting were read and approved.

The committee appointed to investigate the reasons why we were not included on the list invited to the Springfield Conference of the Massachusetts Public Health Council reported and the report was accepted. The motion that the Secretary be instructed to make application for membership in the Massachusetts Central Health Council, and to inclose a check covering the amount of the fee, was made by Dr. Paquin, seconded by Dr. Pierce, and carried.

The membership application of Dr. Thomas Schinkwin was read, and laid on the table for the next monthly meeting.

Committee appointed on the resolutions of the death of Dr. Henry Elisha Page consisted of Drs. L. H. Howard, L. A. Paquin and W. T. White.

It was then moved by Dr. Pierce that a committee of two be appointed to gain the necessary information concerning rates, and various routes on the railroads to Montreal, for the annual convention of the American Veterinary Medical Association and to distribute the same to members of that association. The committee was appointed as follows: Drs. C. H. Playdon and H. W. Pierce.

A suggestion was made that a meeting of the Entertainment Committee be called on Monday, July 2nd, to arrange for the September meeting, to be held in Springfield, Mass. The Secretary would notify the same.

Dr. Thayer, President, reported that Dr. J. B. Lentz, of Amherst, suggested a Massachusetts, if possible, or a New England Clinic, to be held at Amherst for some future meeting.

The motion that the Secretary write to Dr. Lentz, thanking him for the offer, and that the matter be taken up again in the near future, was made by Dr. Paquin, seconded by Dr. Gilbert, and carried.

The meeting adjourned at 7:45.

C. H. PLAYDON, *Secretary*.

NORTH CAROLINA STATE VETERINARY MEDICAL ASSOCIATION

What is conceded to be the best meeting of the North Carolina State Veterinary Medical Association, since its organization, was that held in the Vance Hotel, Statesville, N. C., June 27-28, 1923. This, the twenty-second annual meeting, was presided over by the President, Dr. J. S. Dorton, of Shelby.

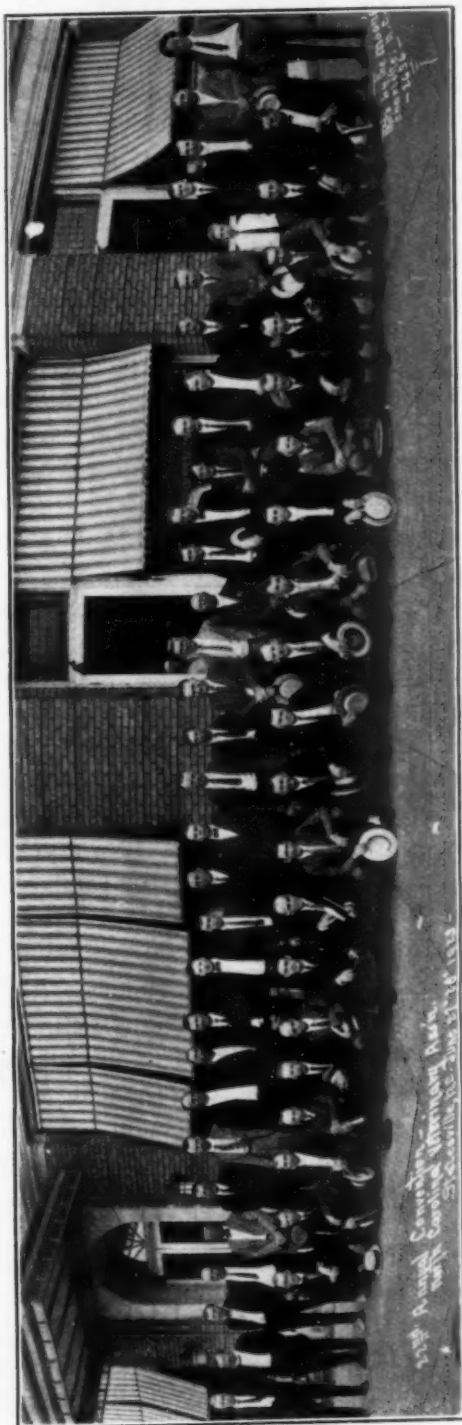
The more than forty veterinarians present were welcomed by the Mayor, Hon. L. B. Bristol, who complimented very highly the work of our organization and the character of its membership and Mr. W. H. Morrison, President of the Merchants' Association, who gave a short history of that organization and the good work it has done in getting reduced freight rates, regulating profits, etc. Response to these addresses was made by Dr. H. J. Rollins, of Rockingham.

Following the order of the program, Dr. M. M. Dew, of Wilson, read a paper on "Post-Mortem Technique," in which he gave a detailed description of this examination of the carcass.

"Rearing and Mating Dogs" was the subject of a paper prepared and read by Dr. S. A. Alexander, of Monroe. He discussed the types and breeds, and several of the more common diseases and their treatment. "Fright disease" was one ailment mentioned, which brought out quite a little discussion, since practically every veterinarian present has had various experiences treating it. Dr. J. C. Flynn, of Kansas City, Mo., one of our foremost authorities on diseases of small animals, attributes the disease to some kind of poisoning. He had been able to produce the disease by feeding certain dog biscuits.

Mr. C. C. Demaree, of the Asheville Health Department, read a paper on "Milk Hygiene," making his discussion mainly from the standpoint of the laboratory man. The milking machine is alright when used under favorable conditions, he said. However, of the one hundred seventy dairies around Asheville, only two use them. Some have found them injurious to the udders.

"Municipal Meat and Milk Inspection" was the title of a paper read by Dr. A. C. Jones, of High Point. He handled the subject from the standpoint of the inspector in the field. He referred to bacteria as dirt. The dairyman can see dirt but he cannot see bacteria. Show him something he can see. He urged the use of the small-top milk-pail, pointing out that the smaller the opening the smaller the target for foreign matter.



Members of North Carolina State Veterinary Medical Association and visitors in attendance at Statesville, N. C., June 27-28, 1923.

He urged the inspectors to be constructive, rather than destructive; to educate the dairyman by gradual innovations and to make friends with him. The dairyman should be made to realize the importance of his product and work to the health of the general public.

In discussing these papers, Dr. S. A. Nathan, of Chapel Hill, held out for strict enforcement of the health laws, advocating the withdrawal of licenses, when dairymen fail to meet the standards, that the public health was too important a consideration for compromises. Dr. L. F. Koonce encouraged the keeping of old dairymen in business by helping them and not putting so many new ones in business.

Dr. M. J. Ragland, of Salisbury, advocated educating the customer as well as the dairyman. Dr. W. T. Scarboro, of Raleigh, advised publishing the bacterial score and getting both producer and consumer to cooperate for mutual benefit. Dr. W. A. Hornaday, of Greensboro, advised helping the dairyman build up to the standard.

According to Dr. C. A. Cary, Dean of the Veterinary Department of the Alabama Polytechnic Institute, Auburn, Ala., speaking on "Conditions Facing the American Veterinarian," he said that machinery will never do away with the mule on the farm or in war. The prospect for the veterinarian was never brighter than it is now, because there is more work to do and fewer veterinarians to do it. The prestige of the profession depends on the character of the rank and file of the practitioners, hence the future of the Association depends upon them. He urged the members to interest themselves in whatever animal industries their clients are interested in. He also urged them to demonstrate to students the necessity of a full college course and to join in a concerted effort to wipe out the veterinary correspondence schools.

The veterinarians, extension workers and medical men must come together and define their spheres of usefulness, he said. The veterinarian should keep his place in sanitary control work. Let every other man have his place. Keep his friendship and you can get what you want and what rightfully belongs to you. He predicted that it is only a matter of time until every town will have meat inspection.

"The principles that govern our relations to our fellow men are the same in every profession," began Dr. Dorman Thompson, in addressing the Association on "Ethics in Veterinary Practice."

"The distinction between the ethics of the professional and the business man is fast becoming obliterated, I am glad to say. The old idea of every man for himself and the devil take the hindmost is outworn. I do not presume that I shall say anything new to you, but there is value in repetition. Iteration and reiteration, line upon line, precept upon precept, example upon example, is the way we march forward.

"Every man should take a pride in his profession. If he is not proud of it, he should quit it. No man who places the economic consideration first can be truly representative of his profession. Making a living is important, but it is only incidental to life. Those who have accomplished the most, who have risen highest, are not the men who made the most money out of their profession.

"You cannot live to yourselves; you should take an interest in the life of your community. A man must first be a good citizen to be representative to his profession. Be honest with yourself and with your fellow men. It should be the purpose of every man to put more in than he takes out of a community. The life of the professional man, as of every other man, should be a constant warfare against selfishness. The old Hebrew prophet, Micah, has given us the basis for a code of ethics that will stand for all time: 'The Lord hath showed, O man, what is good, and that the Lord doth require of thee to do justly, and to love mercy and to walk humbly before Thy God.'

"If the campaign against bovine tuberculosis in North Carolina is maintained at the present rate, it will be eradicated within five or six years," was the assertion of Dr. A. J. DeFossett, Chief of Tuberculosis Eradication in North Carolina. "There is less tuberculosis here than in the northern and western states, hence the time is coming when live stock men from those sections will come here to buy clean, healthy cattle. North Carolina is to be congratulated for taking the lead in tuberculosis eradication. In Vermont 21% of the cattle are tubercular. Seven out of every one hundred children who die of tuberculosis, contract it through the medium of milk, hence the importance of tuberculosis eradication."

According to Dr. T. P. White, Assistant Chief of the Division of Hog Cholera Control Work, Washington, D. C., cholera still remains the greatest menace to the swine industry. The annual, national loss approximates \$30,000,000.00, with an additional cost of nearly \$10,000,000.00 for serum and the service of veterinarians. The serum treatment to young pigs does not give per-

manent immunity. However, pigs simultaneously treated while weighing from fifty to seventy pounds remain permanently immune. Fresh serum is best.

Dr. F. B. Owen, of Raleigh, who is in charge of Hog Cholera Control Work in North Carolina, assured the veterinarians that he and his men are ready at all times to aid local veterinarians in controlling any outbreak of cholera that may be reported to his office. Dr. M. Jacob, of Knoxville, Tenn., advocated the use of oxygen in preference to the air treatment in parturient paresis. He had also used it, with excellent results, in treatment of stricture of teats, this being preferable to surgical treatment. This treatment has also been used in the human female to the extent of saving life.

In discussing veterinary purgatives, Dr. R. H. Parker, of Gastonia, said aloes, used alone, is the best purgative for the horse and hog. He said Epsom salts are the best for cattle, except in cases of low-blood-pressure.

"Some Legal Facts Pertaining to Veterinary Medicine" was the subject of a paper by Dr. William Moore, North Carolina State Veterinarian, of Raleigh. Many of those present used this opportunity to get information pertaining to their interests.

Prof. R. H. Ruffner, Professor of Animal Husbandry and Dairying, at State College, Raleigh, N. C., in discussing the "Live Stock Industry of North Carolina," said 90% of our 260,000 mules, the most valuable live stock in the state, are raised in other states. These mules have a value of \$128.00 per head. We should encourage the raising of more of these animals at home and thus save the nearly five millions of dollars spent each year for them in other states.

Horses come second with a value of \$108 each. Of these animals we produce about one-fourth, or 41,500. There is an increasing demand for horses which is shown by the fact that during January 80% more horses passed through sixty-seven of our principal live stock markets than during the same period a year ago.

Our third class of animals, in value, is swine, which reaches the figure of \$16,904,000. Prof. Ruffner urged that veterinarians raise a few pure-bred hogs and exhibit them at fairs and thus help to dispel the idea of the average farmer, that a veterinarian knows nothing about a hog.

The cow stands fourth in valuation at the low figure of \$39 per head. This should be the most profitable animal on the farm.

Encourage the farmer with all your possible help in breeding and feeding to make it so. Encourage live stock exhibits at county and state fairs and pure-bred live stock sales. It is at these places that many new interests are created.

Dr. J. C. Flynn, of Kansas City, Mo., held the attention of each veterinarian present when he responded to the call to discuss "Small Animal Practice." In response to several requests, he gave a description of his own hospital, its equipment and several methods used in handling various patients. He gave a short history of this line of veterinary work as it has developed during the past fourteen years, showing that it has made remarkable progress. He referred to small animal practice as the "life saver" of the profession. He then discussed black tongue, different forms of mange and treatment for same; rabies, distemper, chorea, etc.

Among the interesting things presented at the clinic, held in Dr. C. L. Cruse's Hospital, was an ovariectomy operation on a bitch, with small opening in abdominal wall, and castration of a cat without restraint, by Dr. Flynn. Dr. R. H. Parker, of Gastonia, performed a cesarean section operation on a sow. Dr. W. C. Dendinger, of Goldsboro, held an autopsy on a cow that had reacted to the tuberculin test.

The evening session of the first day was featured by a banquet that was enjoyed by many ladies and more than fifty veterinarians. Dr. C. A. Cary acted as toastmaster for this occasion. Immediately following the banquet a business session was held, at which time the Secretary-Treasurer's report was read and accepted.

Dr. M. J. Ragland, of Salisbury, was recommended to Governor Cameron Morrison for re-appointment as a member of the State Veterinary Examining Board, for a period of five years. Drs. J. G. Sallade and B. E. Moore were elected to active membership in the Association.

Blowing Rock was selected as the meeting place for the annual meeting that is to be held the last Wednesday in June, 1924. A motion was passed to the effect that this Association hold a special session with the Southeastern States Veterinary Medical Association meeting, in Greensboro, November, 12-13, 1923.

Election of officers resulted as follows: President, Dr. R. P. Huffman, Wilmington, N. C.; First Vice-President, Dr. S. A. Alexander, Monroe, N. C.; Second Vice-President, Dr. J. H. Brown, Rich Square, N. C.; Secretary-Treasurer, Dr. J. P. Spoon, Burlington, N. C.

J. P. SPOON, *Secretary-Treasurer.*

MARYLAND VETERINARY MEDICAL ASSOCIATION

The seventh annual meeting of the Maryland Veterinary Medical Association was held July 19th and 20th, 1923, at Frederick, Md. The meeting was called to order at 10 a. m., July 19th. Dr. R. V. Smith, President, in the chair. Owing to indisposition, the Mayor of the city, Hon. Lloyd C. Culler, was unable to be present and the address of welcome was made by the Secretary.

Following the response, the Association listened to a very able exposition on "Milk Faults," by Professor I. G. Weld, of Washington, D. C., Scientific Investigator for the Chestnut Farms Dairy, of that city. Professor Weld's review of the various reasons why milk had to be rejected at the time of its arrival at a large city milk distributing plant, and the relative frequency of each such reason for rejection, was most interesting and instructive.

Following Professor Weld, Professor G. A. Dick, of the University of Pennsylvania, read a paper on "Vitamins in Cow Feeds." His review of the discovery of these substances, the subsequent work with them and the present-day knowledge of the four vitamins now recognized, was able, thorough and very instructive. Other than in the writings of Dr. McCollum, of Johns Hopkins University, little has yet been written about these most interesting properties and the summary of what is known was, therefore, very timely.

Following an adjournment for luncheon, the Association convened at the Frederick County Fair Grounds for the clinics. These consisted of a double cryptorchid operation, by Dr. R. V. Smith; the removal of a retained testicle in a hog, by Dr. Frank Ryan, of Middletown, Md.; the examination and removal of a portion of a mummified fetus in a cow, by Dr. John P. Turner, of Washington; the setting-up of ears on several Boston Terriers, under ether, by Dr. William P. Collins, of Washington, D. C.; the examination for the parasite, under the microscope, in a case of mange, and the examination for intestinal parasite eggs, under the scope, both under the direction of Dr. Collins, as well as an ovariectomy in a cat, by the same surgeon.

The clinics were over at about six p. m., and all hurried to the Hotel to prepare for what we hope will be an annual banquet at 7 p. m. Forty-eight members and guests gathered for refreshments. The dinner was admirable, the music enjoyable, save

that Dr. Smith was off key, several times, and the speech of the evening short, so the occasion was one to be remembered and repeated.

During our morning session, the ladies of the party visited and shopped, as their fancies dictated, under the guidance and direction of our hostesses, Mrs. Smith, Mrs. McClellan and Mrs. Avery. In the afternoon they made an extended sightseeing trip in autos, provided by the Chamber of Commerce.

The Friday session convened at the Y. M. C. A., at 10 a. m. Letters of regret were read from Professor J. A. Gamble, of the University of Maryland, and Dr. W. E. Cotton, Assistant Superintendent of the U. S. Experiment Station, at Bethesda, both of whom were unable to be present. An able presentation of "Treatment of Retained Placenta," by Dr. John P. Turner, of Washington, D. C., was the first of our program. In addition to his thorough discussion of the subject, Dr. Turner exhibited the clothing and instruments he had found most useful in the cases needing this attention and gave interesting sidelights on his varied experiences. (Dr. Turner's paper is published in this number of the JOURNAL.)

Following a discussion of this paper, we were entertained by Dr. E. M. Pickens, of the University of Maryland, with a lecture illustrated with lantern slides and a movie film on "Parasites of Poultry." Not much discussion was given the subject because of the fact that Dr. Pickens seems to be our only member with any intimate knowledge of it. His statistics of the magnitude of the poultry industry in Maryland were something of a revelation to most of our members.

Dr. Charles Stevens, of the firm of Parke, Davis and Co., then presented his paper and discussion, illustrated with lantern slides, on "Standardization of Drugs." The sources of most of the standard drugs used were revealed and their manner of preparation discussed. A general discussion of the usefulness of the distemper serums and vaccines here intervened.

Dr. M. F. Barnes, of the Pennsylvania State Department of Agriculture, then concluded the morning session with an admirably prepared and thorough presentation of "Sterility." It was unanimously requested that this paper be reproduced for the study of all of our membership. (Dr. Barnes' paper will be published in an early issue of the JOURNAL.)

Following luncheon a clinic was again held at the Fair Grounds. The roaring operation with a burr was performed on an excellent

subject by Dr. Collins, of Washington, assisted by Dr. Smith, and a tumor was removed from the foreleg of a mule, under local anesthesia, by Dr. Smith. Dr. Turner then completed the removal of the mummified fetus upon which he had worked the previous day.

The business meeting of the Association was held immediately after the clinic. Minutes of the January meeting were read and approved and the following members and guests responded to the roll:

Campbell, Conroy, Dornheim, Atherton, Welsh, Grapp, Gross, Grubb, Hastings, Hartenstein, Pickens, Koerner, Meisner, Melody, Muller, McClellan, Martin, Mullineaux, Poe, Reed, Ryan, Rome, Sapp, Smith, Turner, Young, Simonds, Poelma, Mitchell, Collins, Langford, of Martinsburg, W. Va., Fuller and Springer, of Pennsylvania, Dick, of Philadelphia, Barnes, of Harrisburg, Stevens, of Baltimore, Ruebush, of Washington, Edison, Case, Casey, of Virginia, Jones, of Delta, Pa., Braninger, Wright, Hoffman and Cruikshank.

Applications of Drs. Mitchell, of Berryville, Virginia, and Wheeler, of Delta, Pa., were approved. Secretary reported amount on hand as about ninety dollars and was directed to pay outstanding accounts for the meeting. Suggestion was made that the mid-winter meeting be arranged for two days, with clinics. No action was had upon the suggestion. Meeting adjourned at 5 p. m.

The ladies of our party were entertained during the forenoon of Friday, at the residence of Mrs. Smith. As all members departed very promptly after our business meeting, it was quite evident that our better halves had spent the afternoon in packing up and, let us hope, paying hotel bills.

• HULBERT YOUNG, *Sec'y.*

NEW YORK STATE VETERINARY MEDICAL SOCIETY

The thirty-third annual meeting of the New York State Veterinary Medical Society was held at Ithaca, July 25, 26, 27, 1923. The meeting was called to order by the President, Dr. W. Reid Blair. Prof. C. L. Durham gave the address of welcome for Cornell University. Prof. Durham is an interesting and popular speaker so far as the veterinarians are concerned. He has spoken before several groups of students and practitioners and his talks are always welcome. Mayor L. P. Smith gave the address on

the part of the city of Ithaca. Dr. D. H. Udall gave the response for the Society. A meeting with such a happy choice of speakers for the opening exercises is bound to be a great success and so this meeting was held to be one of the best in the history of the Society.

Dr. W. Reid Blair contributed largely to the meeting through his rare ability as presiding officer, and by tact and courtesy in guiding the progress of the program and business. His address will appear in an early number of one of the professional journals and is very much worth reading.

During the afternoon session of the first day several very fine papers were read. Dr. R. H. Spaulding took as his topic "Abortion, Septic Metritis, Pyometra, Cystic Ovaries and Sterility in Cats." His experience in the work with small animals fitted him well for such a paper. "Urinary Calculi in Small Animal Practice" was the contribution of Dr. Frank H. Miller. Dr. Miller has very recent, rich, operative experience in that line and his paper and discussion were very instructive.

Dr. A. Eichhorn presented a paper on "The Single Vaccination Treatment for Rabies." The information given by Dr. Eichhorn was valuable and brought forth a good discussion. Dr. Eichhorn contributed discussions to other papers which were read and in that way was a further help to the meeting. A great deal of interest was manifested in the paper by Dr. J. W. Fuller, on "The Diagnosis and Treatment of the Most Important Poultry Diseases in New York State."

Dr. Blair presided at the dinner given at the Hotel Ithaca. The paper by Dr. R. S. MacKellar, on "Veterinary Practice in Greenwich Village Thirty Years Ago," had been scheduled for another time, but due to the absence of one of the evening speakers the paper was read as part of the evening program.

An innovation at this meeting was the reading of a paper by Mrs. J. L. Wilder, at the conclusion of the dinner, on "The Trials and Tribulations of a Veterinarian's Wife." As the wife of a New York State practitioner, she was equal to her subject and the members and guests were agreeably entertained and instructed by the things she had to say.

Assistant Commissioner C. P. Norgord, of the Department of Farms and Markets, gave a talk concerning the relationship of the practitioner to the accredited-herd plan, as being worked in New York. His talk was looked forward to with interest, for he has charge of the administration of the work. He is a very

convincing and interesting speaker. Dr. Frank H. Miller was also called upon for a few words.

Dr. H. J. Metzger has charge of veterinary extension work in this state and he gave an interesting paper, "Our Mutual Interest in Veterinary Extension Work." The next paper of the morning session of the second day was read by Dr. C. M. Carpenter, as joint author with Dr. Geo. H. Hart, of Berkeley, Calif. The subject was "Bacterium Abortum Invasion of the Tissues of Calves from the Ingestion of Infected Milk."

Dean V. A. Moore had prepared a paper, "Diseases Communicable to Man Through Milk," to be read at another period of the meeting. There was a demand to hear this paper on the part of those who could not be in the meeting at any other time and Dr. Blair ruled it in order. Dr. W. L. Williams was next, with "A Study of Reports of Abortion Committees." Dr. Eichhorn, Dr. Traum and Dr. Williams were active in the discussion of this paper.

The last paper of the morning was read by Dr. J. W. Benner. His subject was "Immunizing Young Pigs Against Hog Cholera." "Why Should Stock Owners Not Be Paid for Cattle Reacting to the Tuberculin Test Made by an Approved Veterinarian?" was the contribution of Dr. Chas. S. Chase, to the afternoon program of the second day. This paper and its discussion led to the submission by the Committee on Resolutions, of two or three resolutions touching upon the tuberculosis question. One called upon the Commissioner of Farms and Markets of New York State to appoint a veterinarian as head of the Bureau of Animal Industry. Another signified the willingness of the profession to cooperate with the Farm Bureau in a campaign of education. Another asked the Society to appoint a delegate to attend the meeting of the U. S. Live Stock Sanitary Association, its next meeting in Chicago. All three were ratified without dissent.

Mr. Victor C. Underwood talked on "The Cooperative Purchasing of Horses." The paper read by Dr. W. G. Hollingworth had as its subject "The Veterinarian's Duty to the Public." The final paper of the afternoon was that by Dr. Geo. H. Berns, entitled "Veterinarians and the Status of Veterinary Medicine in New York City and Brooklyn Forty or Fifty Years Ago."

Dr. R. W. Gannett, of Brooklyn, was elected President. Dr. Chas. S. Chase, of Bay Shore, was elected Vice-President. Dr. C. E. Hayden, of Ithaca, was re-elected Secretary-Treasurer and

Dr. H. J. Milks, of Ithaca, Librarian. The Society voted to meet in Ithaca again next year, after a cordial invitation by Dean V. A. Moore.

Dr. H. B. Leonard and assistants conducted post-mortems on tuberculous cattle during the morning of the third day. Men who stayed for the demonstrations expressed themselves as having derived considerable benefit from the work.

C. E. HAYDEN, *Sec'y-Treas*

DELAWARE VETERINARY MEDICAL ASSOCIATION

Members of the Delaware Veterinary Medical Association and their wives gathered at the Hotel Belhaven, Rehoboth, August 15, 1923, as the guests of Dr. Frederick P. Ruhl, of Milford. Dr. Ruhl extended his invitation to meet at Rehoboth at the time of the University of Delaware Veterinary Conference in December. A splendid attendance at the Rehoboth meeting indicated the doctor's invitation was thoroughly appreciated.

Dr. and Mrs. Ruhl welcomed the members as they arrived at the noon hour. The hotel management provided a special dinner table for the Association in the main dining room of the hotel. Dr. H. P. Eves, of Wilmington, was given the seat of honor at the dinner table on the occasion, he being the oldest graduate practitioner of veterinary medicine in the state. Following the dinner, which was served in true Southern Delaware style, the ladies were entertained by Mrs. Ruhl, while the members held a short business meeting.

Dr. Louis A. Klein, of the University of Pennsylvania, scheduled to address the members at this meeting, was detained in Philadelphia and, consequently, was unable to make the trip to Rehoboth. Dr. Ruhl, substituting for Dr. Klein, gave a very interesting talk upon "The History of Veterinary Medicine in Delaware," especially as it appertains to lower Delaware. The doctor discussed veterinary medicine in the past, present and future. He seems to hold a very optimistic outlook for the future of the profession. It is perhaps not amiss to state in this connection that Dr. Ruhl has been in practice in Delaware for eighteen years. He has built up a wide and extensive practice in a county that has been heavily infested with non-graduates. He is the only graduate veterinary practitioner in Sussex County, but in spite of his isolation from graduate associates, he has kept

abreast of the times and is held in high esteem by all who know him. Dr. Ruhl was formerly Professor of Veterinary Science at the University of West Virginia. He took an active part at the organization of the West Virginia Veterinary Medical Association and is a charter member of that body. The doctor has always been an active worker in the Delaware Association and is a member of the American Veterinary Medical Association.

The Secretary read the proposed new constitution and by-laws, as recommended by the Executive Committee. The new constitution and by-laws was unanimously adopted. When this Society was reorganized at a conference of the veterinarians held at the University of Delaware, last December, the new Secretary was unable to find a copy of the constitution and by-laws. In fact, all records of the old Association were apparently lost. At the suggestion of the Secretary, a new constitution and by-laws was prepared and submitted to the Executive Committee. The Association is now working upon a well-organized basis, and by holding its annual meeting each year in connection with the annual University Veterinary Conference, a long and vigorous life is fully expected for the Association.

Following the business meeting, the party gathered on the spacious veranda of the Hotel Belhaven, overlooking the Atlantic Ocean and the bathing beauties of Rehoboth Beach. Those too old for sight-seeing made many difficult diagnoses and cured many difficult cases. The more adventurous members and their wives not only looked, but actually partook of the splendid bathing facilities afforded by Rehoboth Beach.

C. C. PALMER, *Secretary*.

SWAMP FEVER CARRIERS

Bulletin 168, from the North Dakota Agricultural Experiment Station, by Drs. A. F. Schalk and L. M. Roderick, gives some very interesting data on the "History of a Swamp Fever Virus Carrier." In this publication it is recorded that a known positive case of swamp fever (equine infectious anemia) may go for fourteen years without showing anemia, and then, without apparent cause, rapidly break down and show all of the usual clinical manifestations of typical field cases, including a profound anemia. The need is stressed for some quick, accurate diagnostic test for detecting infected animals and eliminating carriers. The absence of anemia is not to be taken as failure to reproduce the disease in experimentally infected cases.

COMMUNICATIONS

MAL DE CADERAS

TO THE EDITOR:

May I draw attention to one remark, written in the July issue of the JOURNAL, which comes under a review of Professor G. H. Wooldridge's "Encyclopedia of Veterinary Medicine, Surgery and Obstetrics." The words written in the JOURNAL are as follows: "An inquiry came for information concerning a disease existing in Panama, known locally as "derrengadera" or "murina." We turned to the book for information concerning the Panama disease, but failed to find any mention of it."

As "derrengadera" is a term used locally, for a disease universally called "mal de caderas," it is quite possible that Professor Wooldridge has good reasons to offer for the omission of such a local term. For an author to quote all local terms used for certain diseases, however wide his knowledge may be, like that of Professor Wooldridge, is almost impossible.

I shall, for example, mention one disease, which is most prevalent at certain months of the year in Europe, called braxy, also known, as *dwfr-coch*, *gwaewr-hydref*, *bradsot*, *clefyd-yr-wyn*, *strike*, *folleth*, *chwaren-goch*, etc. To know all the terms used in different districts for this fatal disease of sheep is almost as impossible as to discover a curative remedy for it, or for "mal de caderas," as, up to now, we have to admit to owners of horses and sheep that pills and potents and even inoculations are of very little value as curatives of these two diseases.

Tartar emetic, injected intravenously, seems to prolong the life of horses suffering from "mal de caderas," but eventually the animals succumb to the effects of the wriggling parasites; satisfactory results have been claimed by experimental injections of Bayer's 205, on small, laboratory animals, but we still await for such results in the case of the horse.

Upon my arrival in Venezuela, nine years ago, I had to admit to horse owners that I was ignorant of this local term "derrengadera," as the one used in all the text-books which I had read was "mal de caderas," which, of course, means almost the same thing. Nevertheless, neither term is correct. "Mal de caderas" signifies disease of the hip or the joint of the thigh. "Derrenga-

dera" is derived from the verb, derrengar, which means, to hip or to sprain the hip. Anyone who has seen the water-hog (capybara) known locally as "Chiguire," limping along the river banks, when suffering from this disease, would admit that they can be pardoned for thinking that the seat of this irregular gait is situated only in or around the hip joint.

Seeing that "mal de caderas" is the original term used in textbooks for the one and the same disease, which is locally called "derrengadera," I think it would be advantageous to retain the original and universal term, until someone can suggest a better one.

Yours faithfully,

EDWARD MORGAN, F.R.C.V.S., D.V.H.

Government Veterinary Inspector.

Puerto Cabello, Venezuela, July 27, 1923.

CURDLED MILK

TO THE EDITOR:

The condensery here (Carnation Milk Co.) has had trouble this summer with sweet milk curdling. Before using milk they run samples for many different tests, one being the alcohol test, which is the only one that interests us at the present. They have found that one of the reasons for alcohol curdling sweet milk is the leucocytic content. They have also found that this milk cannot be separated, because it quickly clogs the separator. So, naturally, this milk is unfit for use in the condensery and creamery.

The dairyman has come to the veterinarian for help. Clinically the cows appear in the best of health, not even a pathological lesion of the udder, nor even any history of a disturbance. The udders are pliable and seemingly normal. The cows affected cannot be identified, except by this alcohol test, which has been done just as they were milked in the dairy. Many herds in this vicinity had this malady a year ago, but it was not so extensive and lasted only a day or two. This season it has become rather serious, in several herds as many as ninety per cent of the herd being affected.

Macroscopically this milk seems perfectly normal. Microscopically no organisms have as yet been isolated, although the bacterial count runs as high as two million, while under the same conditions a cow standing next to the one giving the curdling

milk has a moderate bacterial count of 200,000 or less. But the affected milk runs exceedingly high in leucocytes.

The food question came up, but with nothing gained as far as we could see. These cows were fed green corn and alfalfa, bran, corn chops and oil meal. Green corn was suspected and they stopped feeding it, but with no results. The affected animals were under the same conditions and rations as other herds.

Sanitation and hygiene was questioned. Because of the extremely wet season muddy runways prevailed. They cleaned up with no results. The affected milk still gave a higher bacterial count under same conditions than the normal or milk not affected.

The problem for us to solve seems to be chiefly: To find out what causes the presence of the high leucocyte count, with no organisms present, no systemic disturbance, and no clinical symptoms. The cows are affected at different and all times of the lactation period. What is the next step to take?

CHARLES ROY STRANGE, D. V. M.

Johnstown, Colo., Sept. 5, 1923.

ABILITY RECOGNIZED

The Trustees of the University of Pennsylvania have appointed Dr. Fred Boerner, Jr. (U. P. '12) first assistant to Dr. John A. Kolmer, Professor of Bacteriology and Pathology in the University of Pennsylvania School of Graduate Medicine.

Dr. Boerner has been in charge of the Pennsylvania Bureau of Animal Industry Laboratories at Philadelphia for the past five years. In his new position his work will be teaching bacteriology to men taking graduate work. He will also have charge of the Graduate Medical School's Laboratory for Clinical Pathology and will ultimately be devoting a part of his time to research work.

While Dr. Boerner's friends regret his loss to the veterinary profession, still they believe he has tremendous possibilities in his new work and that his appointment will tend to bring about a closer relation between the two professions in this country.

TEN EX-PRESIDENTS AT MONTREAL

There were ten ex-presidents of the A. V. M. A. at the Montreal meeting: Drs. W. L. Williams, S. Brenton, John R. Mohler, C. J. Marshall, C. E. Cotton, F. Torrance, V. A. Moore, C. A. Cary, D. S. White and A. T. Kinsley.

NECROLOGY

WILLIAM A. STEPHENSON

Dr. William A. Stephenson, State Veterinarian of Utah, died in a hospital in Salt Lake City on August 16, 1923. He was taken to the hospital eight days before. He had not been feeling well for some time, with a high temperature every day, but gamely stuck to his work, until finally compelled to give up.

Physicians were puzzled as to the nature of his illness, but the death certificate gave Malta fever as the cause of his death. It is thought to have been contracted while Dr. Stephenson was investigating an outbreak of this disease in goats, in the southern part of the State last spring.

Dr. Stephenson was born in Holden, Millard County, Utah, Sept. 13, 1889. He attended the public schools at that place, after which he studied one year at Brigham Young University, two years at the Utah Agricultural College, and two years at the Colorado Agricultural College, graduating in 1916.

After graduation he practiced his profession in Millard County, where he was very successful and popular. Dr. Stephenson was appointed State Veterinarian of Utah, in April, 1921, and discharged the duties of that office in a competent and conscientious manner until his untimely death. The funeral was held in Holden, Sunday, August 19th, and was largely attended by State officers and friends from all over the valley.

Dr. Stephenson was a skilled investigator, an indefatigable worker, a good citizen, a loving husband and father, well liked by fellow workers and all who came in contact with him. Had he been spared he would have gone far. He will be missed. He is survived by his widow, three children and several brothers and sisters, to whom we extend our deepest sympathy.

Dr. Stephenson joined the A. V. M. A. in 1921 and was Resident Secretary for Utah, 1922-3. He served one term as President of the Utah Veterinary Medical Association.

MRS. A. T. GILYARD

Mrs. A. T. Gilyard, wife of Dr. A. T. Gilyard, died September 7, 1923, after an illness of over a year. Our sympathy goes out to Dr. Gilyard and the four sons who are left to mourn the loss of their devoted mother.

W. H. WRAY

Dr. W. H. Wray, of Beaconsfield, Bucks, England, died August 24, 1923. He was the representative of the U. S. Bureau of Animal Industry, stationed in Great Britain since August 1, 1890, and was to have been placed on the retired list next January. He was originally appointed as a veterinarian in the Bureau to assist in the eradication of contagious pleuro-pneumonia.

Born in Rathway, N. J., January 7, 1854, Dr. Wray attended public schools in New York City, including Friend's Seminary and business college. He died as a result of a complication of diseases, at his residence, which he patriotically called "Maryland," in Ledborough Lane. He was buried on August 27, in Beaconsfield Cemetery in the presence of many of his friends who came to pay their last respects.

Dr. Wray's jovial manner and his readiness to express his honest opinion soon won for him a place in the confidence of the British officials. He had the happy faculty of remaining a true American during his foreign sojourn, but was always considered by every Britisher, with whom he came in contact, as a true friend and helpful adviser.

Having joined the American Veterinary Medical Association in 1878, Dr. Wray enjoyed the distinction of being one of the four oldest members at the time of his death. He was a graduate of the American Veterinary College, class of 1878. He was Resident Secretary of the A. V. M. A. for the British Isles for several years.

FERD A. MUELLER

Dr. Ferd A. Mueller, a life-long resident of Indianapolis, Ind., died very suddenly, September 13, 1923. Dr. Mueller was a charter member and a graduate of the Indiana Veterinary College, class of 1908, and was an instructor and secretary-treasurer of the institution for thirty years. He was also secretary of the Indianapolis College of Pharmacy and a leading druggist of Indianapolis. Besides being president and treasurer of the Ferd A. Mueller Drug Co., he was identified with a large number of other business interests in Indianapolis. Dr. Mueller was a thirty-second degree Mason and a Shriner.

Dr. Mueller was a man of philanthropic ideals and devoted much of his time to charity. He was a charter member of Allenheim, of Indianapolis, a home for aged men and women, and served as president of the organization from its beginning up to the time of his death. He was also an active director of the General Protestant Orphan Society of Indianapolis for more than thirty years and once served as president.

The deceased was a lover of mankind and ever since the death of his wife, in 1905, he devoted a great part of his time to the service of helping others. He was a man who readily forgave an enemy and was ever ready to sacrifice for the comfort of others.

He is survived by his three children, Albert G. Mueller, Mrs. Margaretta Fertig and Dr. Ferdinand A. Mueller, Jr. The latter was elected secretary-treasurer of the Indiana Veterinary College, May first last, at the request of his father. Three brothers and two sisters also survive him.

Dr. Mueller was among the Hoosiers who attended the recent meeting of the A. V. M. A., in Montreal. He joined the Association in 1908.

J. CURTIS MICHENER

Dr. J. Curtis Michener died at his home in Quakertown, Pa., on Sept. 2, 1923, aged 80 years. He was a son of the late Dr. Isaiah Michener, one of the early practitioners of Pennsylvania who practiced his profession in Bucks County (Pa.) for sixty years.

The deceased was a brother of the late Dr. C. B. Michener, at one time Assistant Chief of the U. S. Bureau of Animal Industry, and the father of Dr. E. Mayhew Michener, one of the most prominent young veterinarians of this country, who died a few years ago.

It was the correspondent's experience to hear a lecture at the School of Veterinary Medicine, University of Pennsylvania, in 1888, when three generations of the Michener family, all veterinarians, were present, Drs. Isaiah, J. Curtis and E. Mayhew.

The Michener family have been veterinarians in eastern Pennsylvania for nearly a century and have all been brilliant men, who have devoted their lives to country practice and have all been eminently successful as cattle practitioners.

It was Dr. J. C. Michener who rather startled the Atlantic City meeting of the American Veterinary Medical Association

in 1901, by leading a cow into the clinical arena and giving a clinical lecture. This was the beginning of such work at our national meetings.

Dr. J. C. Michener was very much interested in agriculture and had spent most of his later years on his farm, near Colmar, Pa. He is survived by a son and daughter.

J. P. T.

IRA B. LUDINGTON

Dr. I. B. Ludington, of Ludington, Mich., according to press dispatch, died August 30, 1923, as a result of injuries received in an automobile accident on August 4. Dr. Ludington was a graduate of the Ontario Veterinary College, class of 1904, and a licensed practitioner of Michigan. He was 37 years of age.

M. J. SISLEY

Dr. M. J. Sisley, deputy State Veterinarian of Idaho, died by his own hand, July 27, 1923, at Buhl, Idaho. Despondency is believed to have prompted the act. Dr. Sisley was born September 6, 1891, received a high school education, and graduated from the Veterinary Division of Michigan Agricultural College, in 1915. For some time Dr. Sisley was a veterinary inspector in the Bureau of Animal Industry. He joined the American Veterinary Medical Association in 1921. He leaves a widow, a bride of less than three months.

ENGAGEMENT

Dr. E. V. Moore (Corn. '17) of Cortland, N. Y., and Miss Lulu M. Williams of Owego, N. Y.

MARRIAGES

Dr. John B. Taylor (U. P. '17) of Brookings, S. Dak., to Miss Louise Mitchell of Philadelphia, August 1, 1923.

Dr. Francis D. Egan (Ont. '23), of Detroit, Mich., to Miss Clementine Owen, of Toronto, Ont., June 2, 1923.

Dr. H. C. Rea (K. C. V. C. '18), of Charlotte, N. C., to Miss Flora McNeil Barnes, at Fayette, N. C., June 28, 1923.

Dr. Leo S. Englerth (K. C. V. C. '18) of Royalton, Minn., to Miss Florence May Orth, at Royalton, August 21, 1923.

BIRTHS

Dr. and Mrs. B. G. Darling, of Hooper, Nebraska, a daughter, August 29, 1923.

Dr. and Mrs. C. L. Wells, of Baldwin, Kan., a daughter, Shirley Jeane, June 22, 1923.

Dr. and Mrs. L. F. Holmes, of Hillsboro, Wis., a daughter, Patricia Louise, August 9, 1923.

Dr. and Mrs. R. Schaap, of Pipestone, Minn., a daughter, Irene Catherine, August 19, 1923.

Dr. and Mrs. Bernard Johnsen, of Spokane, Wash., a son, Dale Bernard, August 22, 1923.

Dr. and Mrs. William A. Hagan, of Ithaca, N. Y., a daughter, Janet Ann, August 26, 1923.

Dr. and Mrs. L. M. Graham, of Rolfe, Iowa, a daughter, Phyllis Jean, September 3, 1923.

PERSONAL

Dr. R. J. Coffeen (Chi. '06), is Mayor of Stillwater, Minn.

Dr. Hubert C. Smith (Iowa '23) has located at Jesup, Iowa.

Dr. O. K. Simonsen, formerly of Nashville, Tenn., is now at Ames, Iowa.

Dr. R. O. Barnes (Chi. '18), of Claxton, Ga., is Assistant State Veterinarian.

Dr. Robert L. Galt (U. P. '23) has engaged in practice at Quarryville, Pa.

Dr. I. W. Horton (Chi. '95) has removed from Gary, Ind., to Middletown, W. Va.

Dr. A. Hyde (A. V. C. '87) has removed from Philadelphia, Pa., to Brooklyn, N. J.

Dr. J. A. McKitterick (K. S. A. C. '22) of Greenwood, Mo., is a breeder of Hereford cattle.

Dr. H. H. Custis (U. P. '07) is assisting Dr. George S. Fuller, of Philadelphia, with his practice.

Major J. R. Shand (Chi. '07) has been transferred from Fort Oglethorpe, Ga., to Fort Sill, Okla.

Dr. Harry Hedin (McK. '18) has removed from Twin Valley, Minn., to Crookston, same state.

Dr. S. A. Watters (K. C. V. C.), formerly of Poteau, Okla., has gone to Broken Arrow, same state.

Dr. H. M. Springer (Ind. '17) is on temporary work in Wyoming, with the Bureau of Animal Industry.

Dr. E. M. DeTray, (Ont. '07), of Napoleon, Ohio, was nominated for Mayor, at the recent primaries.

Dr. L. S. Backus (Corn. '06) and family, of Columbus, Mo., visited Ithaca, N. Y., during the latter part of July.

Dr. A. D. Hubbell (Chi. '06), of San Bernardino, Calif., is Live Stock Inspector for San Bernardino County.

Dr. U. G. Fridirici (Ont. '90) of Tamaqua, Pa., is again able to practice a little, after an illness of seven months.

Dr. William J. Martin (U. P. '18) has been elected Secretary of the Conestoga Veterinary Club, of Pennsylvania.

Dr. W. O. Hughes (Ind. '16) has severed his army connections and is now located for practice at West Point, Miss.

Dr. Dwight H. Bennett (U. P. '15) is located at Substation 14, of the Texas Agricultural Experiment Station, at Sonora.

Dr. T. M. Bayler (Chi. '11) is cooperating veterinarian with the McLean County (Ill.) Farm Bureau, at Bloomington.

Dr. William J. Lentz (U. P. '04) of the University of Pennsylvania, enjoyed a well-earned vacation at Beach Haven, N. J.

Dr. E. J. Tansey (Ind. '08), of Monrovia, Ind., is President of the Indiana State Board of Veterinary Medical Examiners.

Dr. R. J. Schermerhorn (San. Fran. '14) is now located at 15 N. Chapel St., Elgin, Ill., He was formerly at Redlands, Calif.

Dr. S. O. Fladness (Chi. '12) has been transferred from North Portland, Oregon, to Baton Rouge, La., 603 Roumaine Bldg.

Dr. George W. Winslow (Ind. '20) is now located at Bend, Oregon, P. O. Box 725. He was formerly at Ontario, same state.

Dr. J. A. Bogue (K. S. A. C. '21) of Lawrence, Kans., in remitting his dues, writes: "I could not get along without the JOURNAL."

Dr. E. V. Moore (Corn. '17), of the firm of McAuliffe and Moore, at Cortland, N. Y., acts in the capacity of County Veterinarian.

Dr. Hansford H. Rowe (Chi. '18) has been appointed chief of the meat inspection service recently inaugurated in Richmond, Va.

Dr. John E. Gregory (Ont.) has purchased Lake Mineola, in the Pocono Mountains, and is developing it into a fine summer resort.

Dr. E. A. Williams (St. Jos. '19) is now associated with Dr. John Schreiber, Director of the Ouachita Parish Health Unit, at Monroe, La.

Dr. J. R. Aufente (U. S. C. V. S. '06) has removed from Union City, Tenn., and is now with the C. H. Abattoirs Corporation, Altoona, Pa.

Dr. Charles H. Kitselman (U. P. '18) has been commissioned as First Lieutenant in the Veterinary Officers' Reserve Corps, U. S. Army.

Dr. Harry Shepard (S. W. V. C. '16) is back on the job, at Killeen, Texas, after a lay-off since last May, due to an attack of trifacial neuralgia.

Dr. Frank Hare (K. S. A. C. '20) has resigned his position as Chief of the Bureau of Animal Industry of Santo Domingo, Dominican Republic.

Dr. H. E. Johnson (Corn. '14), of East Lansing, Mich., with his family visited Ithaca, N. Y., enroute to the A. V. M. A. meeting in Montreal.

Dr. C. D. Carpenter (Corn. '20) resigned his connection with the University of California, July first, to engage in poultry practice at Petaluma, Calif.

Lt. J. F. Crosby (Corn. '15) has been assigned to the Medical Field Service School, Carlisle Barracks, Pa. He was formerly at Fort Ringgold, Texas.

Dr. Earle L. Kittrell (K. C. V. C. '17) of Augusta, Ark., was prevented from attending the Montreal meeting by an outbreak of anthrax in his territory.

Dr. F. J. Bolender (U. S. C. V. S. '14) is Field Veterinarian for the State Department of Agriculture of California, with headquarters at Selma, Calif.

Dr. Harry M. Martin (U. P. '16), of the University of Nebraska, motored to Philadelphia, with his family, and spent his vacation in the Quaker City.

Dr. B. M. Underhill (U. P. '95), of Media, Pa., recently addressed the Delaware County Institute of Science on the subject of "The Japanese Beetle."

Lt. E. M. Curley (U. P. '11) has been transferred from Fort Des Moines, Iowa, to the New York State Veterinary College, Cornell University, Ithaca, N. Y.

Dr. C. W. Borland, of 1430 Franklin Avenue, Columbus, Ohio, according to a local paper, was recently arrested for the second time, on a charge of practicing illegally.

Dr. Jacob Traum (Corn. '05) has returned to the University of California, after a year spent in post-graduate study at Cornell University, with Dr. V. A. Moore.

Dr. John Ramsey (Terre Haute '14) is on meat inspection work at Fort Worth, Texas. He was transferred from tick eradication work, in Texarkana, several months ago.

Dr. H. J. Milks (Corn. '04), of Ithaca, N. Y., accompanied by his family, enjoyed a ten-day camping trip in the Adirondack Mountains during the latter part of August.

Dr. George E. Hunt (Corn. '18) and family, of Champaign, Ill., were recent visitors in Ithaca, N. Y. Mrs. Hunt is a Cornell alumna, class of 1912, and a former resident of Ithaca.

Dr. Wm. F. Egan (M. R. C. V. S.), of San Francisco, recently wrote: "Inclosed please find check for \$16.50, being dues for my two sons and myself, and also for three lapel emblems."

Dr. Miller F. Barnes (U. P. '11) has been appointed Director of the Laboratories of the Pennsylvania Bureau of Animal Industry, Philadelphia, Pa., succeeding Dr. Fred Boerner, Jr.

Dr. A. J. Webb, who has been acting as Assistant State Veterinarian of Utah, has been appointed to the position of State Veterinarian, following the death of Dr. Wm. A. Stephenson.

Dr. George H. Hart (U. P. '03) of the University of California, is spending some time in the East. He attended the Montreal meeting and plans to take in the International Dairy Congress.

Dr. Mason Weadon, of Fort Pierce, Florida, is City Food Inspector and, in addition to his private practice, looks after a good-sized farm. Dr. Weadon puts out a hundred acres of tomatoes every year.

Dr. O. F. Hoekzema (Gr. Rap. '10) of McBain, Mich., met with a serious accident on July 3rd, which prevented him from attending the Montreal meeting. At last reports he was recovering slowly.

Dr. I. D. Wilson (Iowa '14) has left Pennsylvania State College, to accept the position of Professor of Veterinary Science, at the Virginia Polytechnic Institute, Blacksburg, Va., succeeding Dr. Wm. G. Chrisman (Ont. '02).

Dr. C. E. Sawyer (K. S. A. C. '21) Assistant Professor of Pathology, K. S. A. C., in remitting his dues, writes: "I am anxious not to miss a number of the JOURNAL, because it contains such interesting and beneficial articles."

Dr. Louis J. Helfand (U. P. '20) encamped with the Fifty-sixth Infantry Brigade, at Mount Gretna, Pa., during July. He holds the rank of First Lieutenant in the Veterinary Corps and is attached to Brigade Headquarters.

Dr. John H. Winstanley (U. P. '10) is representing the Pennsylvania Bureau of Animal Industry, at the county fairs in the Keystone State, with an exhibit of pathological specimens of contagious and infectious diseases of domesticated animals.

Major J. Payne Lowe (N. Y. U. '91 and Nat. V. C. '93), of Passaic, N. J., Professor Wm. Herbert Lowe (N. Y. U. '88), of Paterson, N. J., and Hon. L. Whitney Watkins, Lansing, Mich., Secretary of Agriculture of the State of Michigan, are first cousins.

Dr. J. B. Latshaw (Corn. '16), of Caruthersville, Mo., formerly a member of the teaching staff at Cornell University, paid his Alma Mater visits, both going to and returning from the A. V. M. A. meeting in Montreal. Dr. Latshaw was accompanied by his family.

Dr. L. G. Hart, Sr., (Ont. '92) of Chippewa Falls, Wis., recently met with a serious accident. He received very extensive burns, the result of the gas tank in his car catching fire while it was being filled. It is expected that he will be confined to the hospital for quite some time.

Dr. Russell S. Detwiler (U. P. '15) of Reading, Pa., was in camp at Mount Gretna, Pa., with the Twenty-eighth Division, National Guard of Pennsylvania, during the latter part of July. He is a First Lieutenant in the Veterinary Corps and is attached to an artillery regiment.

Dr. B. Scott Fritz (U. P. '17), of the Pennsylvania Bureau of Animal Industry took his vacation in Maine and Quebec. He states that he caught a fish at Bar Harbor, several feet long. His colleagues do not doubt that he caught a fish, but think it was one of the elastic variety.

Dr. J. R. Fuller (K. S. A. C. '12), of Walla Walla, Wash., reports a recent outbreak of anthrax in a dairy herd resulting in the loss of eight pure-bred Jersey cows. The correctness of the diagnosis was confirmed by cultural methods as well as by animal inoculation. This is the first outbreak reported in the State of Washington and is believed to have been introduced through the medium of feedstuffs.

Dr. Guy W. Rosenberger (San. Fran. '06) has resigned his position as Chief of the Bureau of Tuberculosis Control, Division of Animal Industry, of the California Department of Agriculture, and has been reinstated in the U. S. Bureau of Animal Industry, and assigned to tick eradication work as traveling supervising inspector, on the force of Dr. H. Grafke, of Fort Worth, Texas. Dr. Rosenberger's official station is San Antonio, Texas.

